

# FLIGHT

The  
AIRCRAFT ENGINEER  
AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 1110. (Vol. XXII. No. 14.)

APRIL 4, 1930

Weekly, Price 6d.  
[Post free, 7½d. Abroad, 8d.]

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2.  
Telephone: Editorial, Holborn 1884. Advertising, Holborn 3211  
Telegrams: Truditur, Westcent. London.

Annual Subscription Rates, Post Free.

United Kingdom .. 30s. 4d. Abroad .. 33s. 0d.\*

\* Foreign subscriptions must be remitted in British currency. (See last Editorial Page.)

## CONTENTS

	PAGE
Editorial Comment:	
The West Indies .. .. .	357
World's Largest Flying School .. .. .	359
International Records .. .. .	361
Private Flying and Club News .. .. .	362
Airisms from the Four Winds .. .. .	366
Aircraft for the Private Owner .. .. .	387
Air Transport .. .. .	401
Royal Aero Club Official Notices .. .. .	403
Goodyear Air Wheel .. .. .	404
Air Ministry Notices .. .. .	406
In Parliament .. .. .	406
Personals .. .. .	406
Royal Air Force .. .. .	407
Selfridge's New Aeroplane Department .. .. .	407
Models .. .. .	408

## EDITORIAL COMMENT



In all spheres of human activity there are some enterprises which ought to be put in hand, whatever may be the difficulties of the practical details. One example of this was State support of a British air line some ten years ago. The Air Minister of the time was Mr. Winston Churchill, who took up the attitude of a stern practical economist, and tried to sacrifice the ideal to the exigencies of the moment with the phrase, "Civil aviation must fly by itself." Fortunately, the claims of the ideal soon triumphed over those of economy, and as a result our airways are now beginning to reach out across the Empire.

Another enterprise which should have been, and still should be, undertaken, in spite of similar difficulties of finance, is a British air line in the West Indies. In fact, we can almost regret that the first British subsidies were not devoted to that object. For some years the cross-Channel air lines were, as Sir Sefton Brancker has admitted, a full-scale experiment in how to run an airway. Air lines may be divided into two classes, those which are run for the sake of flying and those which are run for the sake of the people who may use them. London-Paris was at first in the former category; a West Indian line would be in the latter. But Croydon is under the eye of the Air Ministry, and Nassau is not, so this settled the question.

If one spreads out a map of the British Empire and looks at it through aircraft-tinted spectacles, the semi-circle of the West Indian islands leaps to the eye as a place which is starving for a seaplane service. Geographically the islands may belong to the continent of the two Americas, but politically they mostly belong to Great Britain, and so the air line should be British. All the elements are there which make an opportunity for aircraft. The problem of communications between the islands is one which can only be solved satisfactorily by aircraft. The technical difficulties in the way are almost negligible: the only serious difficulty is

### DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list—

1930

April 5	..	N.F.S. Air Meeting, Reading.
April 5	..	Liverpool and Dis. Ae.C. "At Home."
April 5	..	28 Sq. (R.A.F.) Old Boys' Assoc. Social at Slater's, High Holborn.
April 5	..	Aircraft Club, Competition for Models, Harrogate.
April 12	..	N.F.S. Air Meeting, Hull.
April 15	..	Entries close for International Touring Competition.
April 19	..	Leicester Flying Meeting.
April 21	..	N.F.S. Air Meeting, Hanworth.
April 26	..	N.F.S. Air Meeting, Leeds.
April 26	..	45 Sq. (R.A.F.) Reunion Dinner at "Crown and Cushion," London Wall, E.C.
May 31	..	Official Opening and Air Pageant, Bristol Airport.
June 7	..	N.F.S. Air Meeting, Reading.
June 9	..	Northampton Flying Meeting.
June 14	..	Manston Garden Party.
June 15	..	N.F.S. Air Meeting, Nottingham.
June 19	..	Household Brigade Flying Club Meeting at Heston.
June 21	..	Air Rallye at Haldon Aerodrome, Teignmouth.
June 26	..	Ipswich Air Pageant.
June 27	..	R.A.F. Dinner Club Annual Dinner.
June 28	..	Royal Air Force Display, Hendon.
July 5	..	King's Cup Race and Hanworth Air Pageant.
July 13	..	N.F.S. Flying Meeting, Leeds.
July 19	..	N.F.S. Flying Meeting, Hull.
July 20	..	International Light Plane Tour of Europe, starting from Berlin.
Aug. 7	..	Norwich Flying Meeting.
July 31	..	Entries close for 1931 Schneider Trophy Contest.
Sept. 1-6	..	5th International Air Congress at The Hague.
Sept. 6-28	..	Aero Exhibition, Stockholm, Sweden.
Sept. 20	..	Liverpool Air Pageant.
Sept. 27	..	N.F.S. Air Meeting, Hanworth.
Nov. 28	..	
Dec. 14	..	Paris Aero Show.
Dec. 31	..	Closing date for the Aga Khan's Prize for Indian Flight.

financial. Yet the prizes offered are not small. Less promising air lines than that have been subsidised by a British Government, and have soon developed a profitable traffic. We have in mind the Perth-Derby service of West Australian Airways, Ltd., which is now one of the wonders of the aeronautical world. If a Government of the same foresight and determination as the Commonwealth Government were to tackle the question of West Indian communications there can be little doubt that a service of flying-boats from British Guiana to the Bahamas, with connections to Jamaica, British Honduras, and Florida, would soon be proving itself well worth while. It should be remembered that a temporary, or even a permanent, loss on transport facilities may be amply repaid by the development of the area served. Unfortunately, there is no one strong local Government to consider the West Indies as a whole. The various Colonial Governments are poor and can do little. Yet this problem ought to be faced, and it seems that only the Government of Great Britain is in a position to take it in hand. Consequently, we are delighted to note that Mr. Montague seems alive to these considerations. In his remarks on the Civil Aviation Vote in the House on March 18, he said: "We are hoping . . . that it will be possible to develop the West Indies from a bigger Imperial point of view rather than an inter-Colonial point of view . . . I sincerely hope . . . that it will be possible to overcome the financial difficulty and have a British service in the West Indies, particularly in view of the fact that the West Indies are a natural link between South America, with her rich commercial possibilities, and our own Dominion of Canada."

This remark is evidence of the long view, which is always needed in aeronautics. A West Indian air line would not stretch out into the desert. There is wealth at each end of such a line, and there are possibilities of wealth all the way along it. The

islands of an archipelago must always suffer from isolation, and isolation necessarily has a psychological as well as a material effect upon their prosperity. Steamship services cannot cure that isolation: to provide a frequent steamship service would be hopelessly expensive. Air lines are comparatively cheap, and flying-boats are the ideal craft for keeping the islands in constant touch with each other and with the mainland. The Colonies are not Dominions. An Imperial Power cannot with decency say to her small Colonies: "Manage your own affairs: we are busy with our parish pump." The spirit of Empire and the spirit of flying alike forbid such an attitude.

We should also look ahead, as Mr. Montague invited us to do. The Bermudas are only some 750 miles to the north of the West Indies, and Nova Scotia a similar distance beyond the Bermudas. For the marine aircraft of the future, be they large flying-boats or airships, this seems an excellent route, which would link up a number of British lands. At the moment its commercial possibilities may not be obvious, but aircraft have already proved, in Australia and elsewhere, that a really well-run service may create its own traffic. We repeat, that when dealing with aircraft we must always look far ahead.

The British record of private effort in the West Indies is not discreditable. In 1919 the Bermuda and West Atlantic Company tried to open up flying there. Shortage of funds was the difficulty then as now. At the moment Atlantic Airways, Ltd., is making a similar attempt. Last January two Canadian officers took a Canadian-Vickers flying-boat to Jamaica with the intention of starting the West Indies Air Transport Company. But everything favours American efforts. Facilities cannot be refused, and ought not to be refused, to the Pan-American Air Line. If we cannot help our own Colonies, we must not prevent foreigners from helping them. But if the Americans stake their claim, we may have cause in the future bitterly to regret our own shortsighted parsimony.

#### At Buckingham Palace

HIS MAJESTY THE KING held a Levée on March 27, at Buckingham Palace, when amongst those presented to His Majesty were Maj. M. F. Scanlon and Lieut.-Commr. G. D. Murray (Assistant Attachés for Aviation, U.S.A.), Capt. D. Phocas (Air Attaché, Greece), Air Vice-Marshal T. Webb-Bowen, C.B., C.M.G., Flight-Lieut. W. Dalzell, Flight-Lieut. E. David, Air Marshal Sir E. Ellington, K.C.B., C.M.G., Flight-Lieut. L. Elworthy, Wing Commr. D. Evill, D.S.C., A.F.C., Sqdn.-Ldr. A. Fiddament, D.F.C., Flight-Lieut. F. Fogarty, D.F.C., Sqdn.-Ldr. J. Grigson, D.S.O., D.F.C., Air Vice-Marshal F. Halahan, C.M.G., C.B.E., D.S.O., M.V.O., Sqdn.-Ldr. R. Harrison, D.F.C., Group Capt. F. Haskins, D.S.C., Wing Commr. M. Henderson, D.S.O., Air Vice-Marshal E. Ludlow-Hewitt, C.B., C.M.G., D.S.O., M.C., Sqdn.-Ldr. D. Hume, Flight-Lieut. C. Laing, M.C., A.F.C., Air Vice-Marshal A. Longmore, C.B., D.S.O., Flight-Lieut. S. Macdonald, D.F.C., Flight-Lieut. D. Macfadyen, Flight-Lieut. R. Macfarlane, M.C., Sqdn.-Ldr. G. Martingell, A.F.C., Flight-Lieut. H. Massey, M.C., Wing Commr. R. Maycock, O.B.E., Air Vice-Marshal C. Newall, C.B., C.M.G., C.B.E., Flight-Lieut. W. Opie, Air Chief Marshal Sir John Salmon, K.C.B., C.M.G., C.V.O., D.S.O., Group Capt. M. Spicer, Marshal of the Royal Air Force the Lord Trenchard, G.C.B., D.S.O., D.C.L., LL.D., the Lord Wakefield, C.B.E., LL.D., Wing Commr. J. Wood, etc. Amongst those also present were:—Wing Commr. L. Greig, Lieut. de Vaisseau Sala, and Sqdn.-Ldr. A. Kubita.

#### Fleet Air Arm Changes

CAPT. C. E. TURLE, D.S.O., is to take up the post of Director of the Naval Air Division in succession to Capt. I. W. Gibson, O.B.E., M.V.O. H.M.S. *Glorious*, Capt. D. F. Moir, D.S.O., the newest British aircraft-carrier, will be

attached to the Atlantic Fleet. After trials in the Clyde Estuary, the *Glorious* will return to Portsmouth until April 8, and will then go to Devonport from April 9 to 25. She is to join the Mediterranean Fleet at Malta about the end of June, in place of the *Courageous*, which has already returned to Devonport to undergo a refit. The *Courageous*, when ready for sea again, about the end of July, is to join the Atlantic Fleet, in place of the *Argus*, which is to reduce to reserve at Portsmouth about May 1. H.M.S. *Furious*, Capt. E. J. Hardman-Jones, O.B.E., of the Atlantic Fleet, is ordered to be taken in hand for a refit at Devonport in the autumn, after returning from the summer programme. She will land her flights at Portsmouth. The *Glorious* is credited with having attained a speed of 35 knots during her trials. This makes her the fastest vessel of her type, and one of the fastest ships in the Fleet. Her high speed and the number of aircraft she is able to carry emphasises the importance which the Fleet Air Arm is attaining.

#### Title for Chevalier Willy Coppens

CHEVALIER WILLY COPPENS, the London and Paris Belgian Air Attaché, has been authorised by the King of the Belgians to add to his family name the title "de Houthulst." It was over the Houthulst district that this pilot gained the majority of his aerial victories on the Flanders front.

#### Governor's Flight Round Trinidad

IN order to inspect the damage done by extensive bush fires, the new Governor of Trinidad, Sir Alfred Hollis, made a flight round the island on March 25.

#### The Aerial Derby

It seems unlikely that there will be an Aerial Derby this year, owing to the lack of entries.



# THE WORLD'S LARGEST FLYING SCHOOL

By "M.C.C."

**N**ORTH of the Mexican border, and on the Old Spanish Trail between Houston and San Antonio, Texas, the United States Government is constructing the largest aviation school in the world. Driving north-east from San Antonio, we left Fort Sam Houston, the base that served as a training centre during the world war, to our left, and headed toward the great open spaces; past the Salado Creek where historic battles were fought for Texas independence; past Mexican adobe huts huddled in mesquite bushes, we sped, turning east seventeen miles from San Antonio and facing the gateway of Randolph Field.

There lay in view a circle surrounded with a gravel road with several roads leading from it. To our left was an army pursuit plane, and to our right three temporary buildings connected by a gravel walk. These shacks house the cafe, the post office, and the office. Five cow-ponies belonging to the inspectors and workers were tied to a rail between the buildings. We stopped at the cafe to sit on stools and drink coffee from thick handleless cups, while big-booted men sat at the counter beside us.

Passing over the walk to the office of the construction quartermaster, we met Brig.-Gen. Frank P. Lahm, Commanding the Army Air Corps Training Centre, and his aide, Lieut. Harvey Ogden—loaded with plans and papers. They were just leaving the office for their plane, which Lieut. Ogden flew to Kelly Field, a distance of 18 miles by air and 24 by land.

Capt. Arthur W. Parker, Construction Quartermaster, under whose supervision all building and work is to take place, is a pleasant man whose great thoroughness and efficiency does not exceed his courtesy and graciousness. My host on the trip, Mr. E. A. Feille, a man active in the affairs of aviation, who has done much to bring together the military and civil elements of aviation, transacted his business with Capt. Parker while I acquainted myself in this temporary but perfectly organised office. The 39 employed in this section are distributed as follows: engineering section, 16; drafting section, 3; mechanical section, 4; office section, 6.

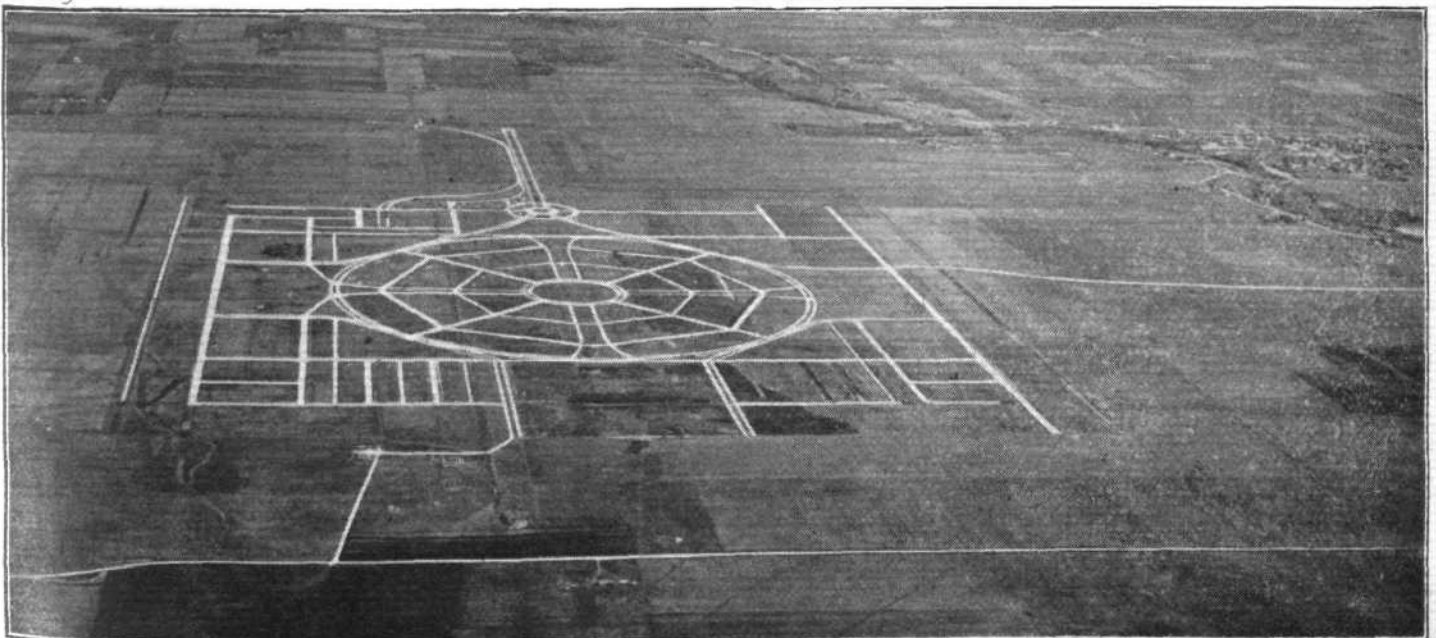
Randolph Field is a tribute to Capt. William M. Randolph, late Adjutant of the Air Corps Training Centre, Kelly Field, Texas. He met his death in a crash, September 17, 1928, while on a cross-country flight. He was born in Austin, Texas, in 1893, and had served in the army from before the world war until the time of his death. His death was considered a great loss to aviation.



**Capt. Arthur W. Parker, Construction Quartermaster of Randolph Field, San Antonio, Tex. Capt. Parker was in France during the Great War with the 35th Division of the U.S. Army.**

The southern city of San Antonio was chosen as the future Air Corps Training centre because of its favourable and strategic location. No fogs or snows the year round, and only occasional rains and winds, makes almost every day an ideal flying day in San Antonio. The 2,300 acres of level land surrounded by rolling country, is fertile farm land and was in cultivation when it was accepted by the United States Government as a gift of the people of San Antonio, August, 1928. The land was purchased by a holding company representing the people of San Antonio. The average price per acre was \$250.

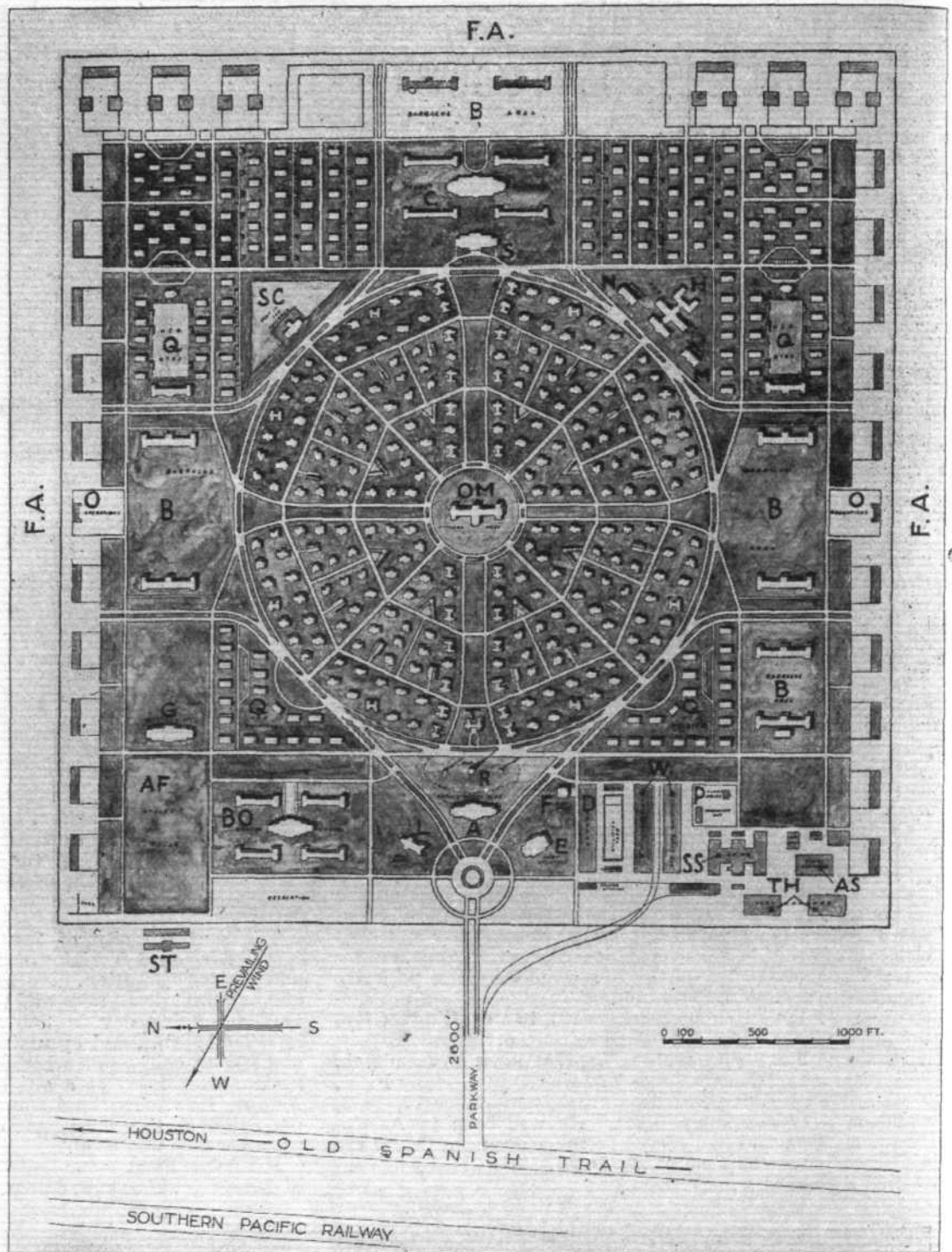
Randolph Field is the realisation of a dream and the plan of Brig.-Gen. Frank P. Lahm. Through the keen foresight



**An aerial photograph of Randolph Field, showing the layout of the field and the progress of development.**

**Plan of Randolph Field :**

- A—Administration Building
- AF—Athletic Field
- AS—Final Assembly
- B—Barracks Areas
- BO—Bachelor Officers' Quarters
- C—Cadet Barracks
- D—Garage
- E—Post Exchange
- F—Fire House
- FA—Flying Area
- G—Gymnasium
- H—Hospital
- L—Port Chapel
- M—Medical
- N—Nurses' Quarters
- O—Operations
- OM—Officers' Mess
- P—Parachute Hut
- Q—N.C.O. Quarters
- R—Radio
- S—School
- SC—School for Children
- SS—Shops
- ST—Stables
- T—Commandant
- TH—Test Hangars
- W—Warehouses



and influence of the men listed below the dream of Randolph Field materialised and it was located in San Antonio, Texas.

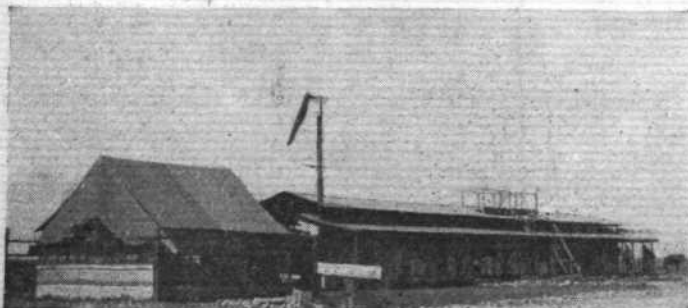
These are the fathers of "The West Point of the Air" :— Major-Gen. Mason M. Patrick (succeeded as Chief of Air Corps of the U.S. Army by Major-Gen. Games E. Fechet); Hon. Frank W. James (Chairman, Military Committee of Congress at Washington, D.C.); Hon. Trubee F. Davison (Assistant Secretary of War for Aeronautics); Hon. Dwight F. Davis (Secretary of War); Brig.-Gen. Frank P. Lahm (Commanding

General, Air Corps Training Centre); R. W. Morrison (President, San Antonio Chamber of Commerce); L. B. Clegg (Vice-President, San Antonio Chamber of Commerce); Col. W. B. Tuttle (Chairman, Military Affairs Committee of San Antonio Chamber of Commerce); Judge Robert L. Ball (Chairman, Special Air Field Committee, San Antonio Chamber of Commerce); Acting Major of San Antonio, Phil Wright; Porter Whaley (Manager, San Antonio Chamber of Commerce).

Aeronautical instruction now in progress at the primary flying schools, Brooks Field at San Antonio and March Field at Riverside, California, will be brought together at this field. It has not been fully decided to transfer the advanced flying school at Kelly Field, San Antonio, Texas, to Randolph Field.

After preliminary engineering, such as removing obstruction for buildings and flying, clearing and grubbing about 180 acres that were in timber, surveying and laying out roads and streets according to plans drawn by the War Department, activity really began on March 1, 1929. Two hundred and fifty men with six steam shovels, and a grader, were put to work excavating, gravelling and rolling the streets to be used during construction. These ways serve as a base for the hard surface to be applied later. Approximately 18 miles had been completed up to October 15 last.

The laying of sewage drains, not including the sewage



The centre of operations at Randolph Field. The drafting room and temporary offices.



depository, has been completed. It was found that the site for the sewage depository dump had excellent gravel, and thousands of dollars were saved for the Government by using this dirt for the roads under construction.

Ample water supply has been provided through the drilling of deep wells on the reservation. At present the ninth well is being drilled. It is estimated that 2,160,000 gallons of water a day will be required for the use of the population of the field.

Deep test holes have been dug to determine the kind of foundation the building will rest upon. The terrain is excellent. The entire flying field will be sodded with Bermuda grass after it is ploughed and levelled. Up to the time of writing, four hundred acres directly in front of the hangar sites and practice landing fields on the edges of the field have been sodded. From one hundred to three hundred men are employed at levelling and planting. With winter sodding under way, the entire flying area will soon be completed.

A spur connecting the main line of the Southern Pacific Railroad with the warehouse site has just been built. Two warehouses are now under construction.

The flying area will contain 1,825 acres. Only two roadways will be constructed on this area: the railroad and a drive 2,600 feet long extending from the Old Spanish Trail to the edge of the building area. This will be the only entrance to the field. From 3,000 ft. to 10,000 ft. of landing field will be available for ships landing or taking-off from any side of the field against wind from any direction. An extensive study of the wind currents has been made, and the runways will be built to be in accordance with the prevailing breezes, which come from the south-east.

At present the preliminary work has progressed to the point that the field is ready for the beginning of permanent construction.

The building area, covering 475 acres is square. The plan of the field is unique in that three of the outer edges of the building area will be lined with hangars. To accommodate an equal number of hangars in one line—as is the usual plan—would require a space three miles long. According to specifications, there will be a road parallel to the rear of the hangars on three sides; and outer and inner octagon, and another double circle around the plaza in the centre. Diagonal roads from the centre to the outside, give a spider web effect to the layout.

In the centre will be a club house for officers, and the quarters for officers will lie in the circle around the cog of this

great wheel. The entire arrangement is an economical one, not only in construction but for actual use.

All buildings will be of masonry, and a modern development of a Spanish-American architecture. There will be one tall building on the square—the administration building—which aside from the offices, will house the water supply and serve as a base for the aerial beacon. Besides the barracks and officers' quarters there will be a hospital, school for children, theatre, Post Exchange, built as a community supply centre, an athletic field, and gymnasium. There will also be swimming pools and tennis courts.

Gas will be used exclusively as a fuel. All electric communication wires, as well as pipes, will be underground.

Up to the present time \$300,000 has been spent. Expenditures will proceed as follows: officers' quarters, \$12,500 each; non-commissioned officers, \$6,000 each; enlisted men in barracks, \$800 each. The waterworks system will cost \$200,000; the sewer plant, \$150,000; the curbs along the roads, \$40,000.

As this is one of the largest construction jobs in the country at this time, great importance has been attached to the awarding of bids. Estimates were received from companies in various parts of the country. On October 18, contract for construction of the first unit of Randolph Field was awarded to Murch Brothers Construction Company of St. Louis, Missouri, who agreed to build the six barracks and two warehouses for \$1,227,000 and start to work within 10 days. They agreed to finish the building within 420 calendar days. The barracks will be built of hollow tile and stucco on a concrete frame. Roofs will be of Spanish tile. One of the barracks will be for 300 men; the other five will accommodate 250 each. Approximately 10,000 men will be at work during the construction period.

Landscaping the field is in the hands of an able architect. Native plants and shrubs will be planted and nothing will be spared to make this a garden spot. After a trip over the field in his usual manner—on his horse—Capt. Parker settles down with his pipe to the piles of work on his desk. Before completely immersed, he visualises the Randolph Field of the future.

"A little Spanish town in the exact centre of an immense green field where 5,000 people live, all engaged in the most romantic vocation the world can offer, living in the most modern and efficient manner, served by all conveniences of the city. These folks carry on to advance the science of aviation."

## MORE FLYING HISTORY\*

THE task of the historian sometimes seems enviable, but it must usually bristle with difficulties. Mr. Harry Harper, the well-known aeronautical correspondent of the *Daily Mail*, has set himself the task of writing the history of flying. It was a worthy task. Flying is becoming a commonplace of life, but plenty of men are still with us who remember when it was the belief of sound authorities (or seemingly sound authorities) that flying was an impossibility. The new generation will never be able to realise the excitement which thrilled the whole world when it was known that man was no longer earth-bound. It is right that the history of those days should be put on record by one who lived through them and lived in close touch with his subject. But the question how to tell his story must have given the author anxious thought. Perhaps it was the memory of the excitement, as step after step of the advance was made good, which decided Mr. Harper to arrange his book in chronological order. There are no special subject chapters devoted to lighter-than-air. The author gives the advance of each year in both airships and aeroplanes. The result may be to detract

somewhat from the value of the book as a work of reference but it adds to its value as history. The chronological summary at the end and the index should help the student to look up any point which he requires.

As the story of flying is full of drama, and as most people have come to regard Mr. Harper as a writer who rather revels in the dramatic, one notes with some surprise the restraint with which he has treated his story in this book. In truth, a little more of the dramatic element in the writing would have been not unwelcome. But the author has compiled rather than written. He quotes extensively and judiciously from records written by others. He has been careful not to insert too many technicalities—in fact we could also have put up with a little more technical exposition. But the difficulties of the task call for the sympathies of a reviewer; and one must admire the completeness with which the author has achieved the object which he set before himself. In addition his choice of illustrations has been very well made, and the pictures really help in the telling of the story. We feel sure that most students of aeronautics, and they are a rapidly growing band, will desire to possess a copy of this book.

F. A. DE V. R.

\* *The Evolution of the Flying Machine: Balloon, Airship and Aeroplane.* By Harry Harper. (Hutchinson). Obtainable from FLIGHT Office, price 21s. net.

### International Records

THE Royal Aero Club has received particulars of the following International Records granted by the F.A.I.:

**Class C (Motor Aviation).—Useful Load:** 1,000 kg.; **Duration:** France, 18 h. 1 m.; **Distance,** in closed circuit, France: 3,309 km. 900 m. D. Costes and P. Codos, on aeroplane Bréguet 19, engine Hispano-Suiza 600 h.p., at Istres-Nîmes-Narbonne, on February 15 and 16, 1930.

**Useful Load:** 10,000 kg.; **Duration:** Italy, 1 h. 31 m. **Altitude:** Italy, 3,231 m. Cav. Domenico Antonini, on biplane Caproni "Ca 90," six engines Isotta-Fraschini Asso, 1,000 h.p., at Cascina Malpensa, on February 22, 1930.

By applying article 93 of the General Sporting Regulations of the F.A.I., the pilot Antonini becomes likewise holder of the following records:—

**Useful Load:** 7,500 kg.; **Duration:** Italy, 1 h. 31 m.; **Altitude:** Italy, 3,231 m.

**Useful Load:** 5,000 kg.; **Duration:** Italy, 1 hr. 31 m.

**Record of the largest load transported to a height of 2,000 m.:** Italy. Cav. Domenico Antonini, on biplane Caproni "Ca 90" six engines, Isotta-Fraschini Asso, 1,000 h.p., at Cascina Malpensa, on February 22, 1930, 10,000 kg.

# PRIVATE FLYING AND CLUB NEWS

**MR. LOEL GUINNESS**, who, with his wife, has for some time past been flying a Gipsy Moth landplane, has now placed an order for a Moth Amphibian. The Amphibian landing gear was specially developed for the Moth by Short Bros. This landing gear consists of a single central float and wing tip jockey floats, combined with an axle which passes through the central float and carries at its extremities two arms at right angles, to which wheels are attached. By the rotation of a wheel in the cockpit the landing wheels are swung upwards and forwards above the level of the float when the pilot wishes to land on the water. An interesting point is that a controllable rudder at the rear of the float operates both as a rudder when landing on the water and as a tail skid when landing on the ground.

**AN EASTER TOUR** has been arranged to take place from Heston, starting on April 17. About ten machines are taking part, and the route to be followed will be roughly Brussels, Cologne, Frankfurt, Munich, Salzburg, Vienna, Prague, Dresden, Berlin, and Amsterdam. Both Messrs. Norman and Muntz, the genial directors of Airwork, Ltd., will be going, and the tour will be in charge of Capt. Baker, their chief instructor. A ground engineer will also accompany the party in order to attend to the machines *en route*.

**THE CINQUE PORTS FLYING CLUB** will hold the third Ashwell-Cooke and Clayton Rickard Cup Competition on Sunday, April 6, at 2.30 p.m., and it is hoped that many private owners will attend. Those arriving during the afternoon are asked to make a wide circuit, and to keep clear of competing aircraft. Adverse weather has been responsible for the flying time being only 6 hr. 35 min. this last week.

**THE ROBINSON AIRCRAFT Co., Ltd.**, of Wallington, are shortly placing upon the market a side-by-side two-seater folding biplane called the "Redwing." The price will be much below that of any similar light aircraft. This machine will be fitted with slots, and a cruising speed of 85 m.p.h. with a landing speed of 30 m.p.h. will be aimed at.

**LONDON AEROPLANE CLUB** flying time for the month of March was 316 hr. 35 min.

Eight members qualified for their "A" licences during this time.

Thirty-eight cross-country flights have been made by members taking up navigation, and the places visited include Hull, Lympne, Old Sarum, Shoreham, Swindon, Sittingbourne, Duxford, Hamble, Grantham, Henlow and Norwich.

**THE LONDON GLIDING CLUB** request pilots of aircraft to refrain from landing on a portion of the land which they are now using, as this is the property of the National Trust, and because the use of this ground for such purpose is specifically forbidden.

The Club, however, hopes to be able to arrange for private owners of aircraft to land on this or some other adjoining property in the near future.

At the Club's gliding ground near Tring, on Sunday, March 30, 1930, Mr. Lowe-Wylde and Capt. Latimer Needham both qualified for the Royal Aero Club's Glider Pilot's Certificate, Class A, issued under the regulations of the Fédération Aéronautique Internationale.

Mr. Lowe-Wylde was flying the machine designed by himself, and Capt. Needham used one of the Club's machines, the Dagnall A.T.1.

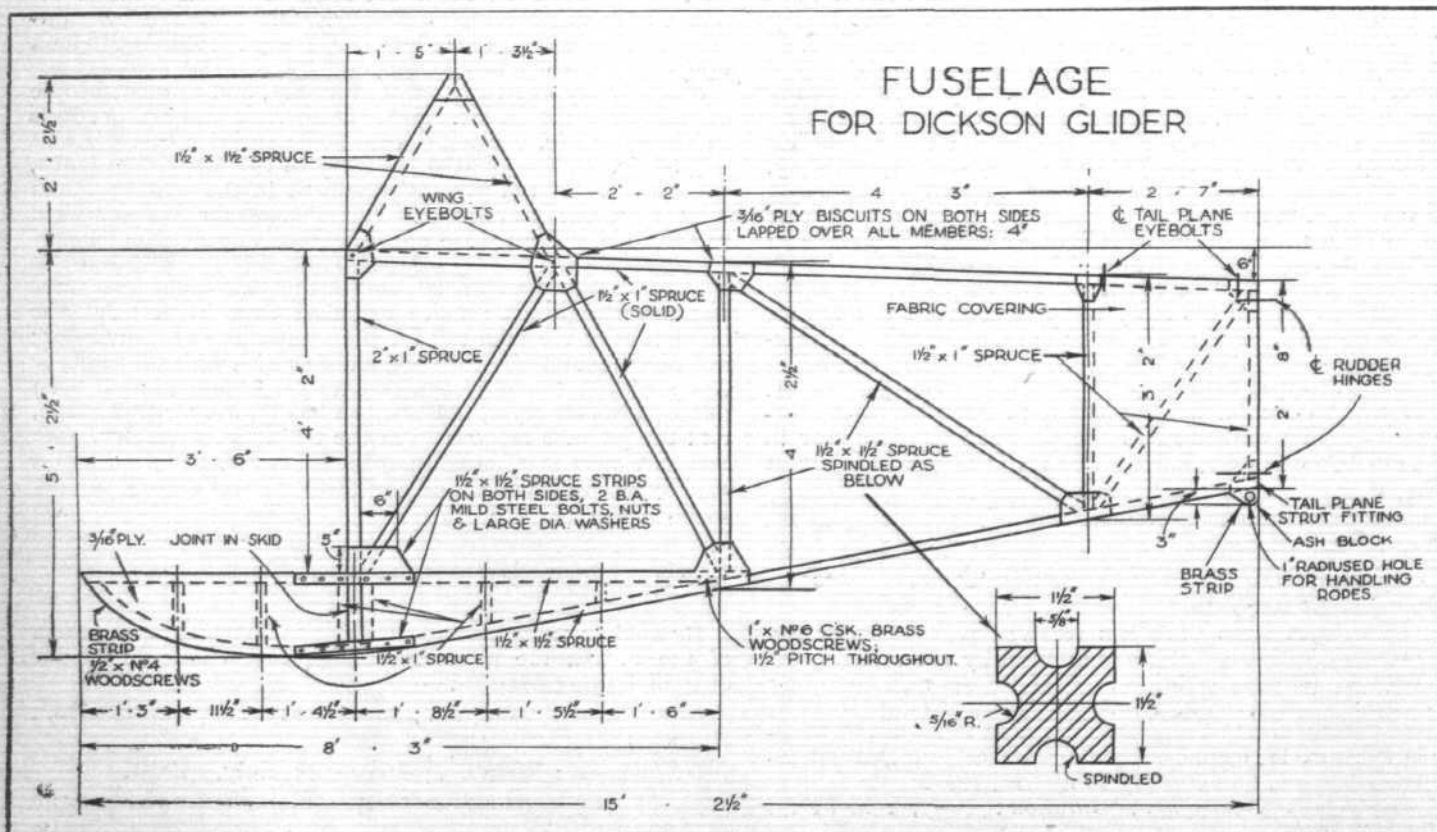
The Committee has now made arrangements for the instruction of *ab initio* pilots at week-ends.

Further particulars of this scheme may be had on application to the Hon. Secretary, London Gliding Club, 44A, Dover Street, W.1.

**HULL AERO CLUB (N.F.S.)** new Club-house will be opened by Air Vice-Marshal Sir Sefton Brancker on Saturday, April 12.

There is to be an air pageant in celebration of the event. One of the main features of this will be an air race open to private owners and Club members, the first prize being a very handsome trophy presented by Sir Arthur Atkinson, President of the Club.

Further particulars may be had from the Hon. Sec., Mr. Mark Goulden, *The Evening News*, 42, Whitefriargate, Hull.



THE DICKSON GLIDER FUSELAGE: The above completes the major details of this glider.



# LIST OF PRIVATE OWNERS

EVERY endeavour has been made to make this list accurate and up to date, but with machines changing hands as they are now, and with the number of private owners swelling as rapidly as it is doing, this is no easy matter; the collaboration of all concerned would, therefore, be greatly appreciated, and anyone who notices mistakes, or who has knowledge of alterations in ownership, or of the ownership of new machines, will assist the editor if they send such information along from time to time, so that it may be included in subsequent lists.

Thanks are due to the British Corporation Register of Shipping and Aircraft and the Automobile Association for their help in the compilation of this list.

Further copies of this list in pamphlet form will be sent on receipt of 2d.

Letters	Owner	Machine
G-AAAA	Capt. G. de Havilland	Moth
G-AAAB	Capt. O. Baker	Solent
G-AAAC	J. Thompson	Moth
G-AAAD	G. Worth	Moth
G-AAAE	R. Scarlett	Moth
G-AAAI	G. Malcolm	Moth
G-AAAO	Duchess of Bedford	Moth
G-AAAS	Capt. O. Baker	Moth Seaplane
G-AAAV	R. Cooper	Moth
G-AAAB	G. Ambler	Moth
G-AAABJ	Sir P. Mostyn	Moth
G-AAABK	Hon. F. Guest	Moth
G-AAABO	T. and Q. Naylor	Moth
G-AAABX	P. Eckersley	Avian
G-AAAC	A. Butler	Moth
G-AAAC	J. Chalmers	Moth
G-AAACZ	R. Thompson	Moth
G-AAADA	J. Irving	Moth
G-AAADC	H. Heathcote Stisted	Moth
G-AAADE	C. Napier	Widgeon
G-AAADF	S. Stephens	Avian
G-AAADH	Capt. S. Burt	Moth
G-AAADV	J. Scott-Taggart	Moth Amphibian
G-AAADW	W. Robson	Moth
G-AAADX	A. Jackaman	Moth
G-AAAEA	Mrs. A. Cleaver	Moth
G-AAAEB	Marquis of Clydesdale	Moth
G-AAAE	Lady Bailey	Moth
G-AAAEF	A. Ferguson	Moth
G-AAAEH	A. Marshall	Moth
G-AAAEI	D. Corsillis	Moth
G-AAAEK	W. Adamson	Ryan
G-AAAEL	Hon. F. Guest	Moth
G-AAAEN	Rev. F. Simpson	Moth
G-AAAEP	L. Ingrams	Moth
G-AAAET	C. Horne	Moth
G-AAAEU	Miss T. Miles	Moth
G-AAAEW	D. Schreiber	Moth
G-AAAEY	O. Greig	Gadfly
G-AAAF	Hon. R. Westenra	Moth
G-AAAFK	G. Linnell	Moth
G-AAAFM	Hon. A. Guinness	Moth
G-AAAFO	W. Black	Moth
G-AAAFU	A. Richardson	Klemm
G-AAAFV	E. Stephen	Klemm
G-AAAGA	Lt.-Col. A. Gault	Moth
G-AAAGE	J. Scott-Taggart	Moth
G-AAAGI	J. Tata	Moth
G-AAAGR	E. Cohen	Avian
G-AAAGS	S. Tyzack	Moth
G-AAAGT	A. Pollock	Moth
G-AAAGY	B. Thynne	Spartan
G-AAAGZ	G. Bouwer	Moth
G-AAAHA	C. Coombes	Spartan
G-AAAHD	W. Brett	Avian
G-AAAHE	W. Cubitt	Avian
G-AAAHF	Hon. H. Bathurst	Moth
G-AAAHG	A. Wallace	Moth
G-AAAHI	N. Norman	Moth
G-AAAHL	E. Stephen	Klemm
G-AAAHN	A. Turner	Avian
G-AAAHO	L. Ingrams	Moth
G-AAAHU	R. Denman	Moth
G-AAAHW	C. Wood	Klemm

Letters	Owner	Machine
G-AAHX	Col. H. Streatfield	Moth
G-AAIA	W. Taylor	Moth
G-AAIB	Lord Ossulston	Moth
G-AAIS	B. Hinkler	Ibis
G-AAIW	T. Mills	Moth
G-AAIX	G. Surtees	Avian
G-AAIZ	C. Higgs	Supermarine Seagull
G-AAJJ	Major G. Allen	Moth
G-AAJK	Lord Douglas Hamilton	Clarke "Cheetah"
G-AAJM	F. Lee	Moth
G-AAJN	L. Horne	Moth
G-AAJO	Hon. L. Guinness	Moth
G-AAJV	Lt.-Commr. G. Kidston, R.N.	Moth
G-AAJZ	Hon. Mrs. A. Westenra	Moth
G-AAJW	E. Lacey	Moth
G-AAKD	A. Methley	Moth
G-AAKE	P. Noble	Moth
G-AAKG	L. Fowler	Moth
G-AAKI	R. Ince	Moth
G-AAKO	G. Stedall	Moth
G-AAKU	F. White	Moth
G-AAKW	W. Adamson	Moth
G-AAKX	Grp.-Capt. J. Baldwin	Moth
G-AALE	F. Francis	Moth
G-AALF	J. Turner	Moth
G-AALG	Sqd.-Ldr. D. Don	Moth
G-AALJ	Maj. A. Nathan	Moth
G-AALK	Hon. F. Guest	Moth
G-AALM	G. Parkerson	Moth
G-AALR	Hon. F. Lea-Smith	Moth
G-AALS	J. Briggs	Moth
G-AALU	Hon. F. Guest	Moth
G-AALV	A. Downes-Shaw	Moth
G-AARB	Sqdn.-Ldr. F. Soden	Moth
G-AARC	T. Worth	Moth
G-AARD	Sir P. Sassoon	Moth
G-AARH	F. Dawson	Moth
G-AARL	J. Carberry	Moth
G-AARN	W. Dickinson	D.H. 6
G-AARU	F. Symondson	Moth
G-AARV	S. Payn	Avro 504K
G-AARW	F. Tuckett	Moth
G-AASA	A. Youngman	Moth
G-AASB	S. Eloff	Moth
G-AASE	Hon. A. Guinness	Supermarine Air Yacht
G-AASG	Miss M. Shillington	Moth
G-AASN	W. Phillips	Moth
G-AASV	G. Gandardower	Bluebird
G-AASY	W. Perkins	Moth
G-AASZ	G. Burney	Moth
G-AATA	W. Dick	Moth
G-AATB	W. Straight	Moth
G-AATD	C. Hunter	Klemm
G-AATE	J. Ellis	Bluebird
G-AATI	H. Piper	Desoutter
G-AATS	H. Andrews	Bluebird
G-AAUH	W. Everard	Moth
G-AAUI	J. Reynolds	Moth
G-AAUP	J. Hargreaves	Klemm
G-AAUS	Capt. R. Wyndham	Moth
G-AAVC	Hon. A. Guinness	Moth
G-AAVL	H. Burgess	Breda 15
G-EAIN	Miss C. Leathart	Sopwith Grasshopper
G-EAPF	H. Pearson	Austin Whippet
G-EAUM	H. Edwards	Avro Baby
G-EBCA	Dr. E. Whitehead-Reid	S.E. 5A
G-EBDK	Lord Carlow	Martinsyde
G-EBIY	A. Scroggs	Wood Pigeon
G-EBJJ	L. Dawson	Wee Bee
G-EBJO	F/O. A. Wheeler	Anec
G-EBJT	Dr. E. Whitehead-Reid	Widgeon
G-EBJV	J. McClure	Wood Pigeon
G-EBKP	T. Baldwin	Avro Avis
G-EBKY	D. Williams	Sopwith Dove
G-EBLV	J. Glenney	Moth
G-EBMF	A. Gee	Moth
G-EBOG	D. Watt	S.E. 5A
G-EBOI	P. Wills	Moth
G-EBOT	P. Swann	Moth
G-EBOV	B. Hinkler	Avian
G-EBPA	F. Miles	S.E. 5A
G-EBPQ	L. Richardson	Moth

Letters	Owner	Machine
G-EBPR ..	A. Pollock ..	Moth
G-EBQH ..	F. Muntz ..	Moth
G-EBQI ..	Sir P. Richardson ..	D.H. 50A
G-EBQM ..	K. G. Murray ..	S.E. 5A
G-EBQP ..	A. Scroggs ..	D.H. 53
G-EBQZ ..	Dr. G. Merton ..	Moth
G-EBQW ..	C. Pugh and J. Buckley	Moth
G-EBRK ..	R. Knight ..	D.H. 53
G-EBRM ..	R. Cazalet ..	Widgeon
G-EBRN ..	H. Law ..	Widgeon
G-EBRO ..	H. Probyn ..	Widgeon
G-EBRT ..	W. MacPherson ..	Moth
G-EBRY ..	Miss Wilson ..	Moth
G-EBRX ..	R. King ..	Moth
G-EBSA ..	Miss E. Slade ..	Moth
G-EBSD ..	L. Balfour ..	Avian
G-EBSO ..	R. Bentley ..	Moth
G-EBTG ..	Lady Bailey ..	Moth
G-EBTI ..	S. Jackson ..	Moth
G-EBTK ..	L. Oldmeadows ..	S.E. 5A
G-EBTO ..	W. Handley ..	S.E. 5A
G-EBTS ..	Duchess of Bedford ..	Fokker
G-EBTU ..	W. Lancaster ..	Avian
G-EBTY ..	D. Fairweather ..	Avian
G-EBTZ ..	G. Storey ..	Moth
G-EBUR ..	I. McClure ..	Moth
G-EBUS ..	J. Ashwell Cooke ..	Moth
G-EBUZ ..	J. Chapman ..	Moth
G-EBVD ..	J. de Fraine ..	Moth
G-EBVJ ..	Sqdn.-Ldr. Wynne-Eaton	Moth
G-EBVK ..	R. Frogley ..	Moth
G-EBVZ ..	Miss W. Brown ..	Avian
G-EBWA ..	K. Murray ..	Moth
G-EBWD ..	H. Murray Philipson ..	Moth
G-EBWL ..	H. King ..	Moth
G-EBWR ..	E. Rayson ..	Moth
G-EBWT ..	W. Runciman ..	Moth
G-EBWX ..	R. Walters ..	Moth
G-EBWZ ..	H. Stephens ..	Moth
G-EBXG ..	M. Scott ..	Moth
G-EBXM ..	A. Douglas ..	D.H. 53
G-EBXJ ..	H. Ashworth ..	Avian
G-EBYA ..	E. Hayes ..	Avian
G-EBYG ..	H. Leathes ..	Moth
G-EBYK ..	Mrs. Baring ..	Moth

Letters	Owner	Machine
G-EBYO ..	Miss E. Scott ..	Avian
G-EBYP ..	F. Gough ..	Avian
G-EBYR ..	E. Percival ..	Avian
G-EBYV ..	K. and J. Parker ..	Moth
G-EBYY ..	Air Comm. J. Weir ..	Autogiro
G-EBZD ..	C. Brown ..	Avian
G-EBZG ..	J. Oliver ..	Moth
G-EBZH ..	R. Rees ..	Moth
G-EBZI ..	E. Thierry ..	Moth
G-EBZJ ..	A. Holt ..	Fokker F. VII
G-EBZL ..	G. Carpenter ..	Moth
G-EBZO ..	J. Roberts ..	Moth
G-EBZP ..	D. Tennant ..	Moth
G-EBZR ..	Viscomte de Sibour ..	Moth
G-EBZV ..	Hon. F. Guest ..	Junkers F. 13

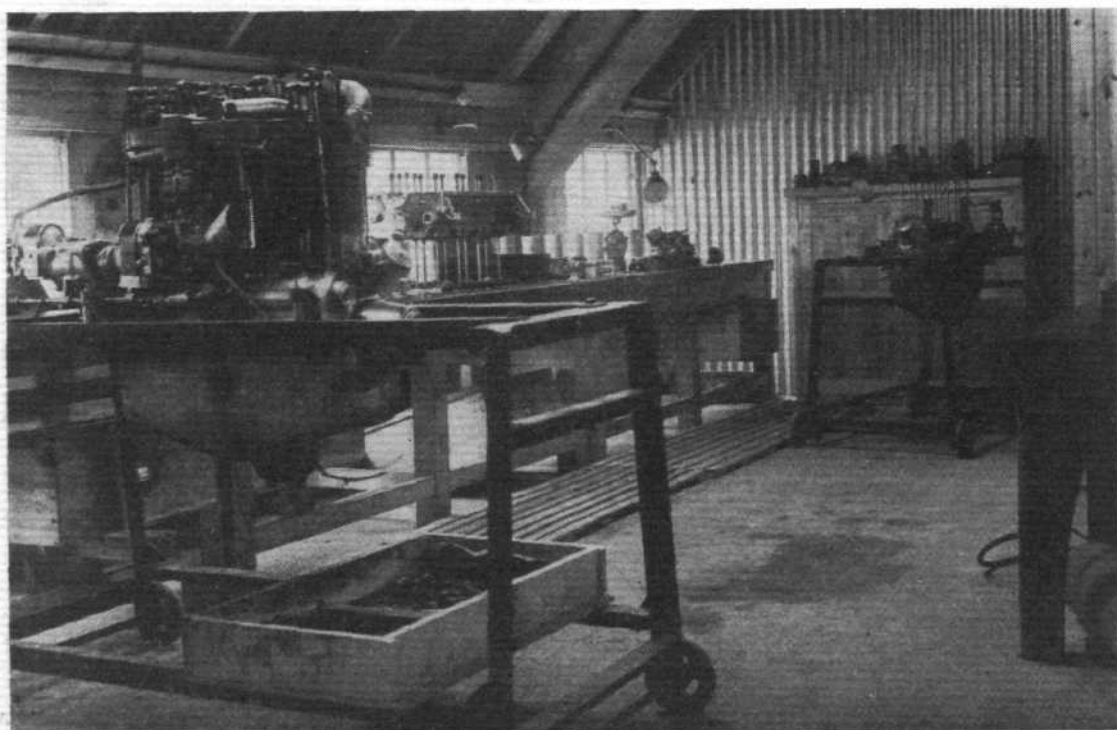
3 pairs of owners each sharing one aircraft.  
171 owners with one aircraft.  
12 owners with two aircraft.  
1 owner with three aircraft.  
1 owner with five aircraft.

Total .. 191 owners.

Anec ..	1	Henderson and Glenn	1
Austin Whippet ..	1	Gadfly ..	1
Avro Avian ..	18	Ibis ..	1
Avro Avis ..	1	Junkers F. 13 ..	1
Avro Baby ..	1	Klemm ..	6
Avro 504 K ..	1	Martinsyde ..	1
Bluebird ..	3	Ryan ..	1
Bréda 15 ..	1	S.E. 5A ..	6
Cierva Autogiro ..	1	Simmonds Spartan ..	2
Clarke "Cheetah" ..	1	Sopwith Dove ..	1
Desoutter ..	1	Sopwith Grasshopper ..	1
D.H. 6 ..	1	Supermarine Air Yacht ..	1
D.H. 50A ..	1	Supermarine Seagull ..	1
D.H. 53 ..	3	Supermarine Solent ..	1
D.H. Moth ..	135	Wee Bee ..	1
D.H. Moth Seaplane ..	1	Westland Widgeon ..	5
D.H. Moth Amphibian ..	1	Westland Wood Pigeon ..	2
Fokker ..	2		

Total .. 206 Privately-owned Machines.

March 31, 1930.



SERVICE FOR PRIVATE OWNERS; Owners can now have their engines overhauled at Heston in the new workshops shown above, (FLIGHT Photo.)



GLIDING enthusiasts in Merthyr Tydfil should write to Mr. C. Wills, Ingleside, The Walk, Merthyr Tydfil.

THE DORSET GLIDING CLUB was inaugurated in the Guildhall, Weymouth, at 7 p.m. on Thursday, April 3, by His Worship the Mayor of Weymouth (Councillor Percy Boyle, J.P., M.B.E.).

THE BERKS, BUCKS AND OXON AERO CLUB will be opened by the Rt. Hon. Sir Leslie Wilson, G.C.I.E., P.C., C.M.G., D.S.O., at National Flying Services' Air Pageant, which is to be held at Reading Aerodrome, Woodley, next Saturday, April 5.

He will first open the club-house of the Berks, Bucks and Oxon Aero Club and will then start the pageant by firing a "Verrey" pistol. This is timed to take place at 2.15 p.m.

Sir Leslie Wilson was formerly Governor of Bombay and has always been a keen supporter of aviation. His interest in flying brought about the formation of the Bombay Aero Club.

The first event in the pageant will be a display of formation flying by No. 600 (City of London) Auxiliary Squadron, R.A.F. The squadron will be flying their new Westland "Wapiti" bombers, machines of the latest service type, with which they have only recently been equipped.

Thereafter there will be a programme of flying events lasting from 2.30 p.m. until 5.30 p.m.

THE LANCASHIRE AERO CLUB.—The month of March has been one of the most satisfactory in the history of the Club.

Our Chief Instructor has completely recovered from his

accident and is now hard at work again. One says "hard at work" advisedly, since he has no less than 37 dual instruction pupils to deal with at the moment. Fortunately, Mr. M. A. Lacayo, our first *ab initio* trained pupil, has now obtained his "B" licence and has been approved as a voluntary assistant instructor. Fourteen new flying members have joined during the past few weeks, and the number of active flying members is greater than at any previous period.

Although only three Avians have been in service during the month, the Club's personal record of 17 hr. 50 mins. flying in one day has thrice been closely assailed during the month. G/EBMQ, the original Mark I Cirrus Moth presented by our President, Lord Wakefield, will shortly be in commission again completely reconditioned, while the new all-metal Hermes Avian, which he is now generously presenting to the Club, is expected by the middle of April. With the arrival of summer time, therefore, it is confidently anticipated that all Club records in the matter of flying hours will be easily beaten.

Only one "A" licence has been obtained during the month, but two other members have been launched solo, and a further twelve are expected to follow at any moment.

A Gliding Section of the Club has been formed, and a Glider of the Prüfling type has been purchased from Germany and has reached England in safety. Operations are expected to commence almost immediately.

A hard tennis court is under construction, and it is hoped in the near future to extend the club-house premises very considerably and to provide sleeping accommodation for members anxious to learn to fly in the shortest possible space of time.

## BRITISH GLIDING ASSOCIATION

THE B.G.A. held their inaugural meeting on Thursday, March 27. Sir Sefton Brancker, who has accepted the presidency, presided, and in his opening speech he gave a most able short history of gliding from the early efforts of Sir George Caley in 1809 down, through Lillienthal, Pilcher and the Wright brothers, to the Itford meeting of 1922, and so to the present revival of the gliding spirit. He announced that arrangements had been made whereby gliding pilots' certificates would be issued in conjunction with the R.Ae.C., and also that the Air Ministry had agreed to allow

the B.G.A. to frame their own regulations controlling gliding in general.

The following members were elected to the council:—Messrs. Ashwell-Cooke, Culver, Crawford, Dagnall, Gordon England, Goodfellow, Lander, Lowe-Wylde, Needham, Purves, Whidborne, and Wingfield. Col. the Master of Sempill then moved a vote of thanks to the president, and Mr. Handley Page seconded in his usual inimitable style.

Sir Sefton, in thanking the members, said that though he had kept the Air Ministry out, they would at the same time always be ready to help if they were asked to do so.

### A.I.D. T.S.A. Dinner

THE fifth annual A.I.D. Technical Staff Association Dinner will be held on May 2 at the Hotel Russell, Russell Square, London, W.C.1. Time, 6.30 p.m., for 7 p.m. Morning dress. Tickets 10s. 6d. each. A strictly limited number of

tickets are available for those connected with the aircraft industry.

Early application, accompanied by remittance, should be made to Mr. J. Jarvis, A.I.D., Room 749, Alexandra House, Kingsway, London, W.C.2.



FOR THE IRISH FREE STATE: A most successful acceptance test flight has been accomplished with the first Vickers "Vespa IV." Army Co-operation aircraft, fitted with an Armstrong-Siddeley "Jaguar IVc" engine, shown above, for the Army Air Corps of the Irish Free State. The performance put up by the machine was 135 m.p.h. at 15,000 ft.

# AIRISMS FROM THE FOUR WINDS

## Australia-England Flight

MR. DAVID SMITH, the young Australian pilot who—as announced in last week's issue of FLIGHT—set out from Sydney on March 24 in a Ryan monoplane for England, has met with misfortune at the very beginning of his venture. He is accompanied by Lieut. Shiers, who flew with Sir Ross



The Ryan monoplane on which Mr. D. Smith and Lieut. Shiers are attempting a flight from Australia to England.

and Sir Keith Smith from England to Australia in 1919. They first had trouble on March 26 when, flying from Cloncurry to Camowee, a faulty compass caused them to fly off their course. However, they reached Newcastle Waters on March 28. The following day they made a forced landing about 40 miles from Wyndham, owing to a broken camshaft. Having a wireless transmitter on board, they sent out an S.O.S. stating that they were short of food and had landed in a desolate tract of "hoodoo" country. A search party was sent out, and located the airmen on March 31. They were brought to Wyndham, rather weak but otherwise none the worse for their adventure.

## Mr. Alan Butler's Progress

MR. AND MRS. ALAN BUTLER, who are flying the Gloster Survey machine (Bristol "Jupiter") out to Rhodesia, have been delayed at Aboukir owing to a burst oil tank. They arrived at Khartoum on March 31, and proceeded on their way the following day.

## New York to Bermuda Flight

ON Tuesday, April 1, a Stinson monoplane on floats, with Whirlwind engine, started from New York in an attempt to fly non-stop to the Bermudas, a distance of 760 miles. A crew of three were on board, namely, William Alexander, pilot, Capt. Lewis Yancey, navigator, and Mr. Bouch, the owner of the machine, who was to act as wireless operator. Capt. Yancey was navigator on the Bellanca machine piloted by Roger Williams, which flew from Maine to Spain last year.

## Italian R.A.F. Celebrations

THE seventh anniversary of the constitution of the Italian Royal Air Force was celebrated in Rome on March 28, when Signor Mussolini conferred various decorations, including the Medal for Valour on the widow of Capt. Motta, who was killed on the eve of the Schneider Trophy contest, and a similar medal on the father of the Schneider Trophy pilot, Warrant Officer Dal Molin, who was killed recently.

## De Havilland Aircraft Proprietary, Ltd., of Australia

THE headquarters of the De Havilland Aircraft Proprietary, Ltd., have now been moved from Whiteman Street, South Melbourne, to Mascot Aerodrome, Sydney. The Melbourne Agency of the firm has been taken up by Matthews Aviation Proprietary, Ltd., one of the partners in which, Mr. Manifold, owns a Gypsy-Moth, and flew it in the great east-to-west air race. The Tiger-Moth, in which Capt. H. S. Broad set up a world's speed record for light aeroplanes, has been sent out to Australia, and will be flown there by Maj. Hereward de Havilland.

## Junkers G.38 establishes Records

RECENTLY, while undergoing the fuel-consumption tests prescribed and officially observed by the German D.V.L., the giant Junkers four-engined type G.38 put up two performances which are being submitted to the F.A.I. for homologation as records. Flying on the Dessau-Leipzig route, the machine averaged 174 km./hr. (108 m.p.h.) with a useful load of 5 tons, and covered a distance of 206 km.

(128 miles) carrying the same load. The figures were obtained with the machine throttled to cruising speed, and do not represent the maximum of which the G.38 is capable.

## Selfridge's New Department

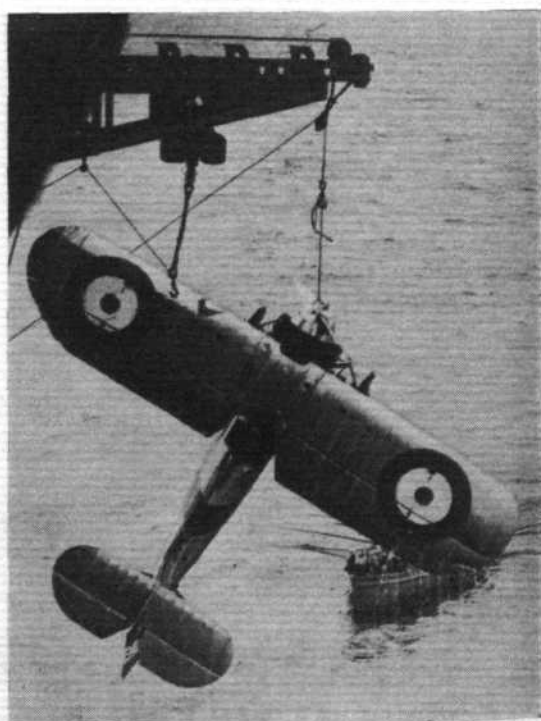
SELFDRIDGE'S have opened an aviation department at Avonmore Road, which is right opposite Olympia. They had an official opening on Monday, March 31, and a large number of people were invited to celebrate the occasion. In the hall they had on view a Moth, a Desoutter, a Bluebird and a Klemm, also many engines ranging from the Rolls-Royce down to the little 40-h.p. Salmson. Sundry accessories were shown, and a bookstall was laid out with a varied selection of aeronautical literature. Selfridge's are making arrangements whereby they can supply any make of aircraft on the hire-purchase system, and a stock of several types will be kept. Purchasers can also make arrangements for having their flying instruction through the department. A model of the Handley-Page 40-scater was on view, but the hire-purchase terms were not stated, nor the probable delivery date mentioned! Mr. Thornton Morris is in charge of this department, and if Selfridge's think there is sufficient in it for them to open such a department, there can be no doubt that the industry is in a healthy condition.

## By Air to International Rugby Match

IMPERIAL AIRWAYS, LTD., announce that as there will be a great demand to see the last international rugby football match, they have arranged for a special Easter air return to Paris at the rate of £8, leaving Croydon at 8 a.m. on either Good Friday, Easter Saturday or Monday, returning from Paris on the Monday evening at 6.30 p.m., or on Tuesday morning at 8 a.m. In addition to the road transport included in the tickets, a special car will be provided for those witnessing the international match, being timed to leave Colombes Stadium on Monday, at 5.15 p.m. promptly. Passengers taking advantage of this service will be supplied on arrival in Paris with a small sketch map, showing where the car will be parked.

## Miss Elinor Smith's Record

THE U.S. Department of Commerce has informed Miss Elinor Smith that the recent flight of her's has established a new official altitude record for women. The Bureau of Standards states that the barograph showed that she attained an altitude of 27,418 ft. as compared with the late Miss M. Crosson's record of 23,916 ft.



THE FISHING SEASON! An R.A.F. "Flycatcher" after an impromptu "spring clean"





# AIRCRAFT

## FOR THE

# PRIVATE OWNER

**A**NOTHER spring is approaching, and with it another season of intensive flying activity on the part of private owners, members of light aeroplane clubs, and others who manage an occasional "flip" in a machine. That being so, we have thought that a special section of FLIGHT devoted to aircraft designed for use by the private owner would be of interest not only to existing, but also to potential owners and users of civil aircraft. That this spring and summer will see a great increase in the number of those who use the aeroplane for pleasure and/or business is not to be doubted. Correspondence which reaches us indicates the growing interest which a large section of the general public is now taking in aviation, and many who are potential purchasers of aircraft are held back by an exaggerated idea of the cost.

It has not been an altogether easy task to decide which machines to include, and where to draw the line between machines for the private owner and machines more likely to be suitable for regular air transport. For example, the Supermarine "Air Yacht" is actually a private owner's machine, although it is to be feared that it will be some years before machines of that size are sold in considerable numbers to wealthy private owners.

Another difficulty has been to decide which, if any, foreign types to include. In the end we decided to include only such as are to be bought "over the counter" (figuratively) in this country, *i.e.*, only such foreign aircraft as are for sale in England through accredited and established agents or concessionaires.

The various types will be found briefly described in the following pages, while a table on p. 390 contains all the main data relating to the dimensions, weight, and performance of these machines.

The time has now passed when most aeroplanes could be had with one type of engine only. The modern tendency is to provide alternative power plants for any one type of machine, and brief particulars of the engine types likely to be installed in machines for the private owner have therefore been included in this section of FLIGHT. It is somewhat curious that, as distinct from the aircraft manufacturers, the engine makers have exhibited considerable shyness in quoting price figures. For that, however, FLIGHT cannot accept the blame.



## AVIAN

ONE of the very well-known light aircraft which has made the club movement possible is the Avian.

Built by A. V. Roe's, of Manchester, it has achieved world-wide popularity in a very short time, and now, in its latest all-metal version it is even further enhancing that popularity.

As at present manufactured, it has an all-metal welded fuselage. The longerons and struts are of circular section and the bracing of the side panels is by diagonal struts of the same section. Wire bracing is used for the top and bottom panels much in the same way as it is used in the Avro V and X. The fairings and deckings on the fuselage are of ply-wood.

The wings are of wood construction with wooden spars and ribs, but the top centre-section is a welded steel tube structure which also carries the fuel tank.

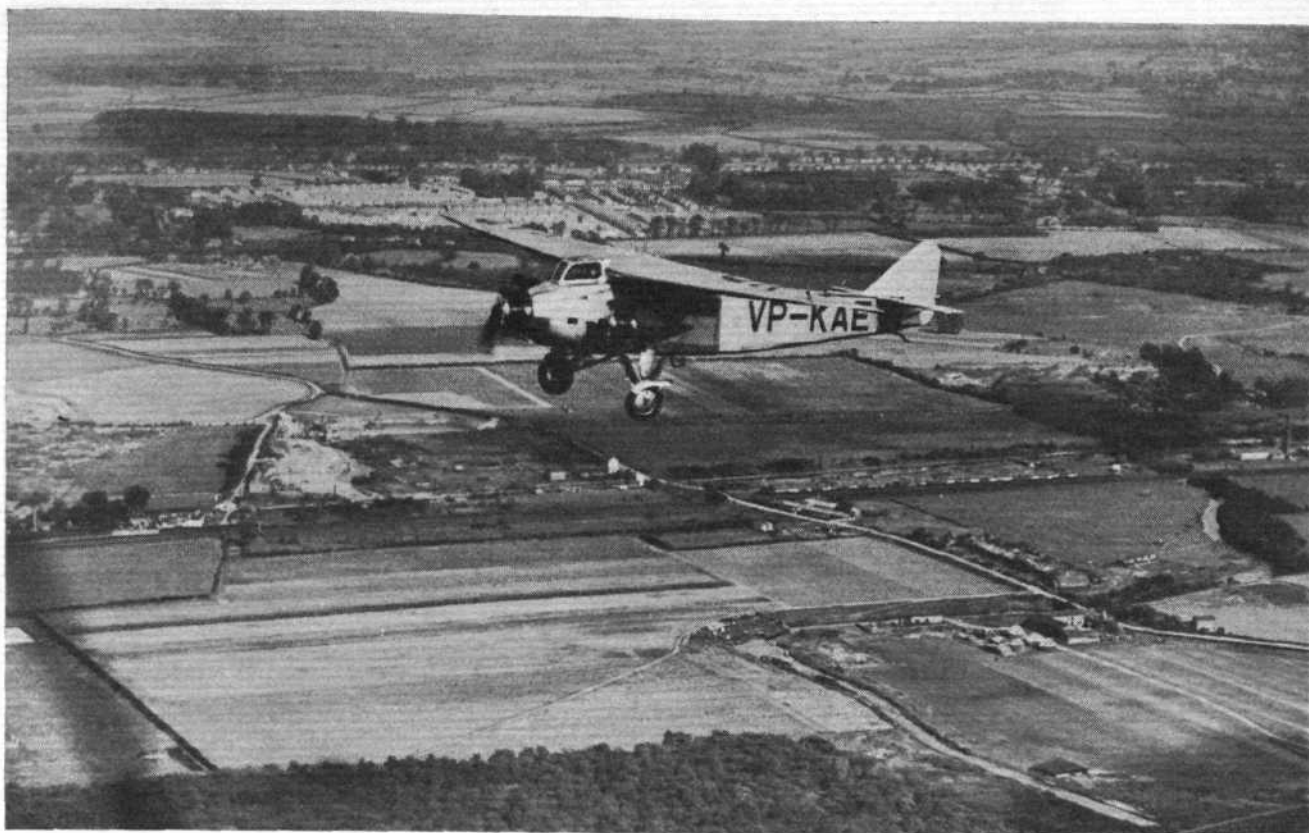
The undercarriage has been changed several times on the Avian, but the latest form is very satisfactory, and will be retained permanently. The radius rods and bent axles are hinged to the centre-line of the bottom of the fuselage, and the compression leg is taken to the top longeron. The shock absorbing part of this leg is rubber pads and metal friction plates separated by metal washers. The stroke of the leg is extra long, so that heavy landings may be made without damage to the machine, and the wide track of 6 ft. allows it to be taxied across wind without fear of overturning.

Two standard forms are now built, one with the Genet Major engine and one fitted with the Cirrus-Hermes.

Both are voted by pilots as very easy to handle.







## AVRO V

**T**HE Avro V is the outcome of the purchase of the Fokker rights by A. V. Roe and Co., who, when they decided to enter the commercial market in a large way took the line that it would be far better for them to manufacture a well-known and tried type than to attempt to create a new market for a machine of their own designing.

Actually the Avro V is not a Fokker type, but it is designed by A. V. Roe's on the same principles as the other larger Fokker machines which they are also turning out. It is in effect a small edition of the Avro X, which in the country of its origin is the Fokker FVII 3 m. The front cockpit has accommodation for one pilot only, and the cabin behind him carries four passengers.

The pilot's cockpit is, of course, in front of the leading edge of the main plane, and his seat is high, so that his view in all directions is very good indeed, in spite of the fact that he is completely closed in.

The passengers have separate small chairs, and the cabin has large windows down the sides, so that all passengers

can see out very well. There is also adequate provision for heating and lighting.

Luggage accommodation is large. There are two compartments, a small one for heavy trunks, etc., under the pilot's cockpit, and a large one for lighter packages directly behind the passengers' cabin, both having access doors from the outside of the fuselage.

Between the cabin and the luggage compartment is a well-fitted lavatory.

Constructionally the Avro V follows Fokker practice. The fuselage is built from steel tubes, and is a welded structure, while the bracing is either the Fokker double wire bracing through small loops at the angles of the struts and the longerons or else diagonal struts according to the situation in the fuselage.

The main plane is a one-piece wing with boxed ply-wood spars, ply and spruce ribs and ply-wood covering.

The undercarriage has an exceptionally wide track, and consists of a radius rod and bent axle to the bottom longerons on each side, and a telescopic leg which goes vertically upwards to the outer engine mountings. Wheel brakes are fitted.





## BLUEBIRD

**T**HOUGH designed by the Blackburn Aeroplane Co., of Brough, the Bluebird is built by Sanders-Roe, Ltd., of Cowes, and is marketed by Auto-Auctions, Ltd., of Burlington Gardens, London, W.1.

This position is unlike any other at present in the industry, and it came about because the Blackburn Co. realised that with their extensive contracts for machines for the Air Ministry they could not hope to organise their factory economically to produce commercial machines in large quantities, therefore, instead of attempting to make any compromise they delegated all the orders for Bluebirds which they might receive to Saunders-Roe to deal with at their newly-arranged factory at Cowes. As for the selling side Auto-Auctions, who have a very strong position in the motor-car world, saw that the sales side of aircraft was bound to develop on the same lines as that of motor-cars, where the large agent controls large areas as regards the sales, and thus leave the manufacturer free to devote himself entirely to

manufacturing and, moreover, enabling him to stabilise prices by receiving larger contracts from the agents. They therefore, secured the sole selling agency for the Bluebird, and Sqd.-Ldr. Ridley, a director of the firm, handles this side of their business. Sqd.-Ldr. Ridley has a very distinguished war record in the R.A.F., and therefore knows what he is about when it comes to aeroplanes.

The Bluebird has, as is now well known, one cockpit with the seats arranged side by side. This arrangement is one that is becoming very popular, and certainly for the private owner there can be little doubt that the majority would prefer having their passenger alongside them, so that they can talk in a normal voice instead of having to have ear-phones and be completely cut off from the other cockpit.

Constructionally the Bluebird is very modern and is made of metal throughout. The covering is fabric, but the structure is chiefly composed of steel. This is one of the few machines in which the wings are also built of steel, the spars being drawn sections of high tensile steel strip.







# BREDA

**I**NTERNATIONAL AIRCRAFT, LTD., of New Bond Street, London, W.1, are the sole concessionnaires for the Breda in this country, and they have recently imported two machines of this type from the Italian factory.

The Breda is in its way a very interesting little machine. Its stalling speed is phenomenally low, even though its top speed is high and it is practically impossible to spin it.

The cabin is arranged with the two seats in tandem, and although the pilot's cockpit has no windows at the sides—that is, no glass windows—pilots say that there is a complete absence of draught, making the machine particularly comfortable to fly.

The machines over here have "Gipsy" engines fitted, which would appear to blanket the forward view somewhat owing to the high mounting, but apart from this the pilot should have no great difficulty over the view. In the front cockpit the windows may be slid aside as required.

Access to the cabins is by doors, that to the front seat being on the starboard side, while that to the pilot's seat is on the port side.

The wings are arranged to fold, it being only necessary to use a jury strut for the front bracing strut on each side and to fold up a small flap at the wing root to clear the cabin top.

The equipment is exceptionally complete. Wheel brakes

are fitted as standard, as are a dual set of instruments and controls, a centralised fire extinguisher system, and a compass.

There is a large luggage compartment behind the pilot's cockpit with its own door opening on the port side of the fuselage.

Wood is largely used for the construction, though steel tubes play an important part in the front fuselage. The rear fuselage is plywood covered, as are the wings and tail units.

The Breda now has a divided axle undercarriage with rubber blocks of very large size in compression for the telescopic leg.

The fuel is carried in two tanks, one in either wing root, a design which leaves the cabin roof clear, so that it can be glazed and allow the pilot an upward view.





## AIR COUPE

**T**HIS machine has been designed especially for the owner pilot who wants a machine that will, so to speak, maintain itself.

It has many special features with this end in view. Mr. H. Boulton, who has formed the Civilian Aircraft Co., of Burton-on-Trent, has been connected with aviation since 1909, and was for many years designer for Handley-Page, so that he can be said to have a deal of practical experience at his back to guide him in this venture.

The fuselage is a ply-wood structure throughout, and instead of the normal varnish is protected with a cellulose lacquer, which should greatly enhance its weather resisting properties and obviate the necessity for repainting except at very infrequent intervals.

All the controls are designed as rods, so that the owner can have no trouble with cables which may stretch or fray, and also the rods make inspection very much simpler. All moving parts on the control system are fitted with ball bearings, which again should require practically no attention.

The undercarriage is made with ball joints to all moving parts, and these are enclosed in leather sleeves packed with grease, so that they should be impervious to the weather.

The wings are designed to fold, and are constructed of ply-wood throughout, a method which enables the designer to dispense with internal bracing, which may require attention and truing up.

The fuselage has two doors, so that although the seats are arranged side by side, the pilot and passenger will each be able to enter from their respective sides, as in all modern saloon cars.

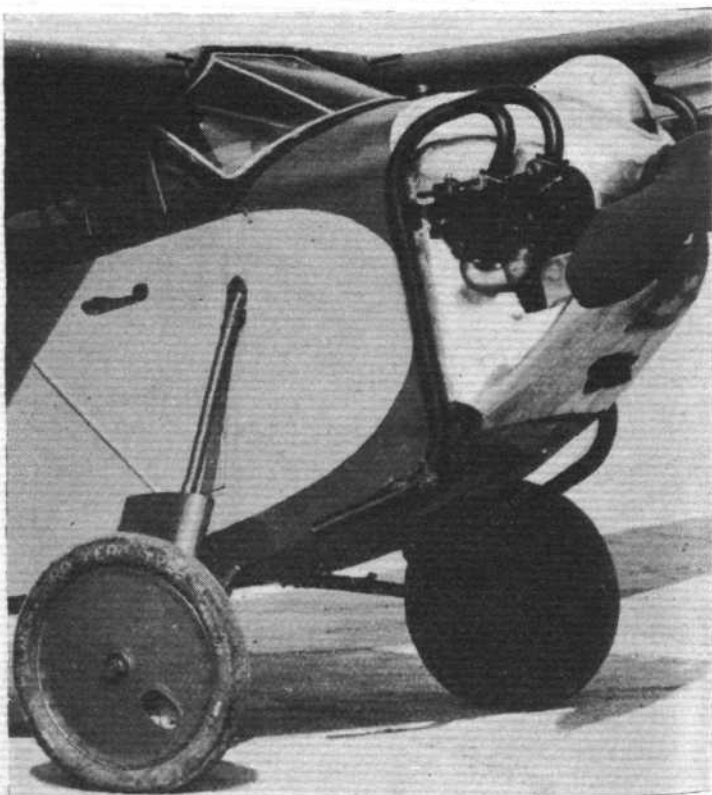
The engine mounting is rather unique. In order to facilitate production, this has been designed so that the engine may be mounted on the mounting, which will carry the controls, the oil tank, the instrument panel, and all pipes, etc., before it is assembled in the machine, and when this latter is ready the complete unit is bolted up in place on the nose of the machine. This means that the engine unit as a separate entity may be erected in the engine shop and tried out before it is taken to the fuselage, and when it does get there, there will be nothing to do as regards fitting except bolting up four bolts.

The tail unit is also designed on the same principle, and

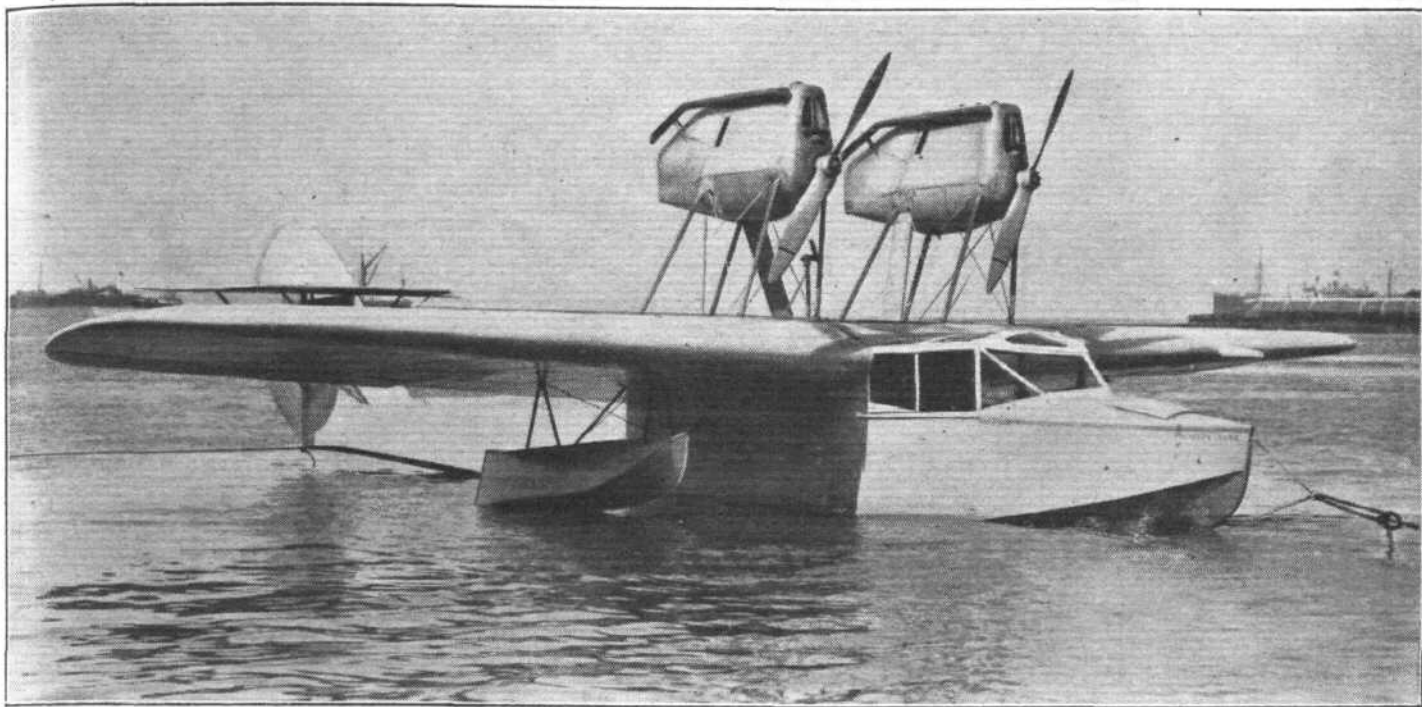
can be bolted on to the fuselage by four bolts. This unit includes the tail plane, elevators, rudder and fin, so that when ready to assemble, besides bolting up, the only other job to be done is to connect up the controls, and this also is arranged to be a simple matter.

The rear part of the cabin has a large skylight, through which the pilot has an unimpeded view, even when the tail of the machine is on the ground.

The fuel feed is, of course, by gravity, and the engine is the flat twin air-cooled A.B.C. 85-h.p. Hornet.







## CUTTY SARK

**S**AROS' Cutty Sark is the only flying machine of its kind at present manufactured in England. As a private owner's machine, it comes into the class which caters for people who want a machine capable of carrying four people and it is built by Saunders-Roe at Cowes.

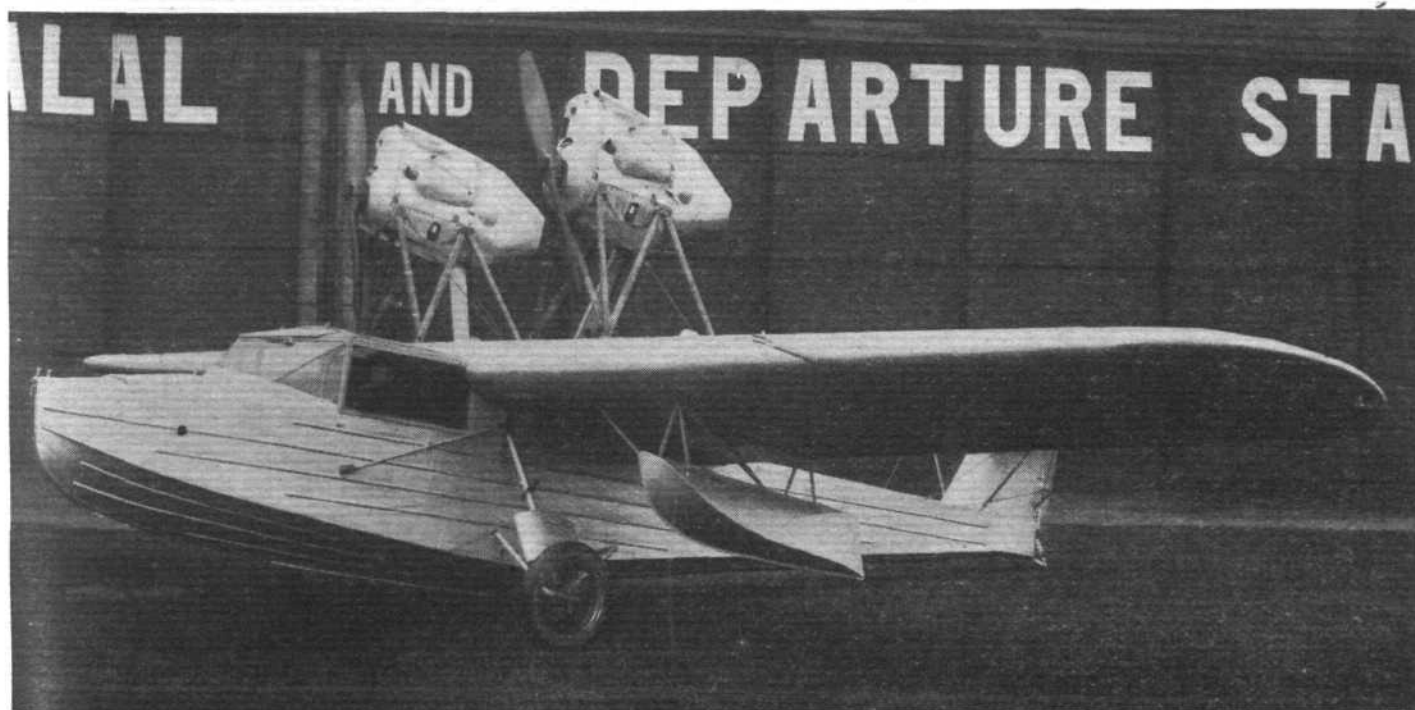
As a flying-boat it is unique in its construction, being a combination of metal and wood. The hull is built entirely of "Alclad." This is duralumin protected on the outside with a coating of pure aluminium which acts as a very good protection against corrosion. Fitted with two "Cirrus-Hermes" engines, it has a good performance, and in its latest version it should have a wide appeal to those who wish to travel widely in their machines. The wing structure is plywood, and is divided into many watertight compartments, so that in the case of a crash when the hull becomes waterlogged, the wing tip floats would keep the machine above water, and should they fail, the wing itself would support the whole machine for a very long time.

A further development which should even more widen its

appeal is the fitting of an amphibian undercarriage. With this undercarriage, which allows it to land on aerodromes or on the water, the "Cutty Sark" must be considered as the air-yacht par excellence.

The seats are arranged in pairs and dual controls are provided for the front pair, so that the "Cutty Sark" might well be used for instructional work for seaplane pilots, or in any case as a private owner's machine it will have the advantage of a reserve pilot being able to take over the controls for a spell. Further developments of this machine are being planned in the "Windhover" and the "Cloud." Both these are really in the luxury class for private owners, but for the man who can afford them they should be among the best in their class. The former is a three-engined version with a cabin accommodating five persons, while the latter is a 6-8 seater, with two larger engines.

All of these can be fitted with the amphibian undercarriage, and if they follow out the promise offered as developments of the "Cutty Sark," they should prove a type for which we have been waiting for some time.





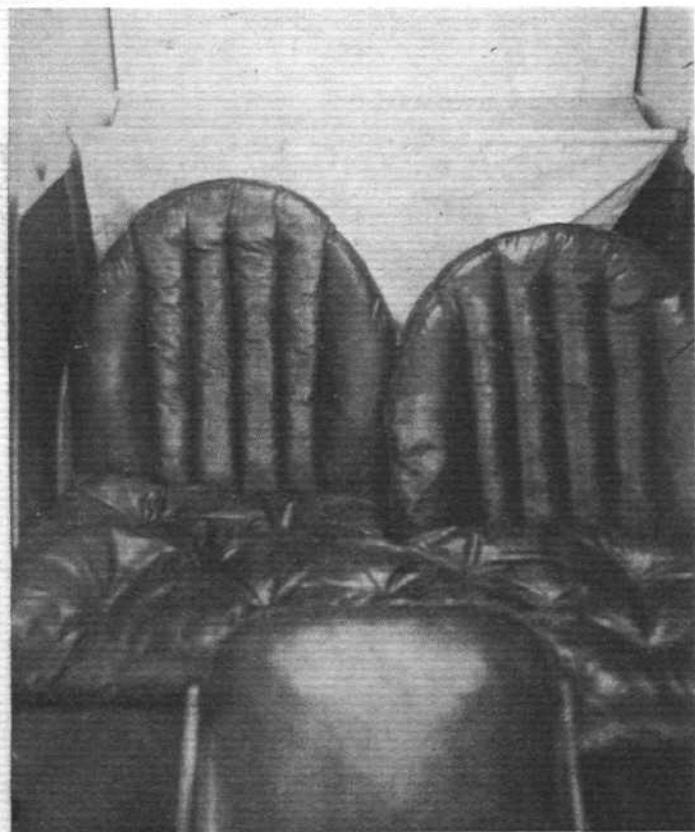
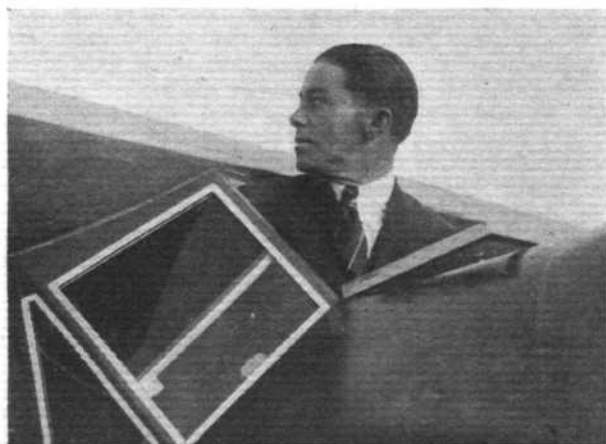
## DESOUTTER

**T**HE Desoutter is the only three-seater cabin machine of its type being built in this country. Originally this machine was the Koolhoven F.K.14, and was built in Holland by Mr. Koolhoven, but Mr. Desoutter realised the opening there was over here for such a machine and bought the manufacturing rights. His factory, the Desoutter Aircraft Works at Croydon, is now, in consequence of his foresight, a hive of industry, and a large number of these machines have already been turned out.

For the man who requires an aircraft which is comparable to a saloon car the Desoutter is ideal. Three people are carried; the pilot in front and the two passengers behind him in comfortably-padded seats, as can be seen in the photograph below. There is no doubt that for general private flying the closed cabin machine is the type which will ultimately become quite common, and those who have

experienced the delights of being able to step straight into the machine without any special clothing, knowing that they will be warm and dry, will not want to revert to the open cockpit type of machine.

The Desoutter is also being used by several concerns as a taxi machine where the demand is for one to carry just



two passengers. The general lines are somewhat reminiscent of the Fokker machines. The wing is in one piece and is ply-wood covered, there is an attachment to the fuselage either side by the top longerons, but these points are only for registration, and do not take any stresses at all, as all the flying loads are transmitted to the main spars via the wing struts. This method effects a considerable economy in the spar strength, which can be taken advantage of in the design of these members.

The engine now fitted as standard is the Cirrus-Hermes, and with this engine the cruising speed is about 100 m.p.h. An additional recent refinement is the folding front wind-screen, which allows the pilot to look behind him before taking off. One of our photographs shows this clearly.

The fuselage is entirely of wood, with a fairly light internal structure and a ply-wood covering which makes it a very light and yet at the same time a very strong form of construction, and moreover has the added advantage that small repairs can easily be carried out by any good carpenter.

Luggage accommodation is provided for under the passengers' seat and also behind them in a special compartment.

The undercarriage has an exceptionally wide track, which makes the Desoutter very stable on the ground, and there is no tendency to turn over in a cross-wind.





## ELF

**P**RODUCED by George Parnall and Co., of Bristol, the "Elf" is a private owner's machine that is rather heavier than most other light aircraft. It is fitted with the "Cirrus-Hermes" engine, and the designers have concentrated on certain points which make this machine somewhat different from the majority of light 'planes.

Both seats are placed behind the top centre section with the object of giving both the pilot and passenger a better view, and the centre section itself has been dropped to eye level. The wing bracing is in the form of rigid Warren-girder strut bracing which eliminates all necessity for truing up or adjusting wires, a job which is usually associated with biplanes. Particular attention has also been paid to the question of folding, and the overall width when folded has been kept down to a very small figure.

The fuselage is very roomy and consequently the cockpits are very comfortable. It is built on the semi-monocoque principle, with a comparatively light internal structure covered with ply-wood.

The controls, including the dual controls, are built as a separate unit, and can be placed in position through the bottom of the fuselage when this is finished. Luggage is

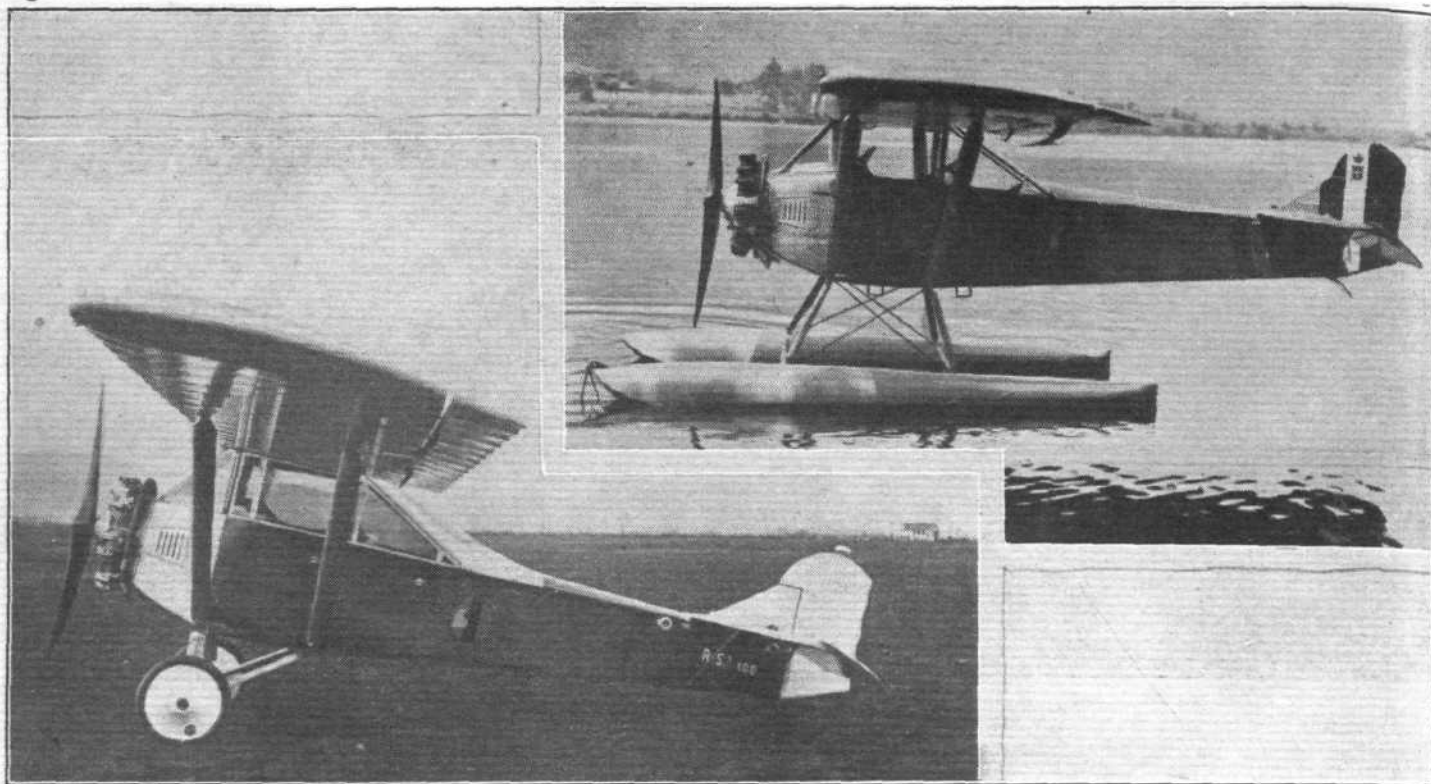
very amply provided for by a large compartment behind the pilot's cockpit, and in front of the passenger's cockpit there is also a locker which can be utilised for a tool kit and a spare can of fuel.

The wings are of normal construction with spindled spruce spars and spruce and ply-wood ribs, and the covering is fabric. The ailerons are operated by tubes and also have tubular spars, and the trailing edge of the lower wings, of a corresponding width to the ailerons, is built as a separate unit, so that it can be folded up when the wings are folded and thus reduce the overall width in this condition.

The fuel arrangements are somewhat different to the normal machine of this class, as the main fuel tank is in the fuselage and holds 20 gallons, and an engine-driven pump supplies fuel from this tank to a small gravity tank, holding 3 gallons, in the centre section, from whence it is fed to the engine by gravity.

Throughout, the general idea of the "Elf" has been to produce a machine which requires no complicated upkeep and which, through its sturdiness, will give the private owner no trouble at all without having to have constant expert attention, hence the rigid wing bracing and the ply-wood covered fuselage.





## FIAT

**T**HE Fiat is another small machine which comes from Italy, and in this country it is handled by Fiat Motors, of 43, Albemarle Street, W.1.

It is a small parasol monoplane which can be supplied with a cabin top or as an open machine.

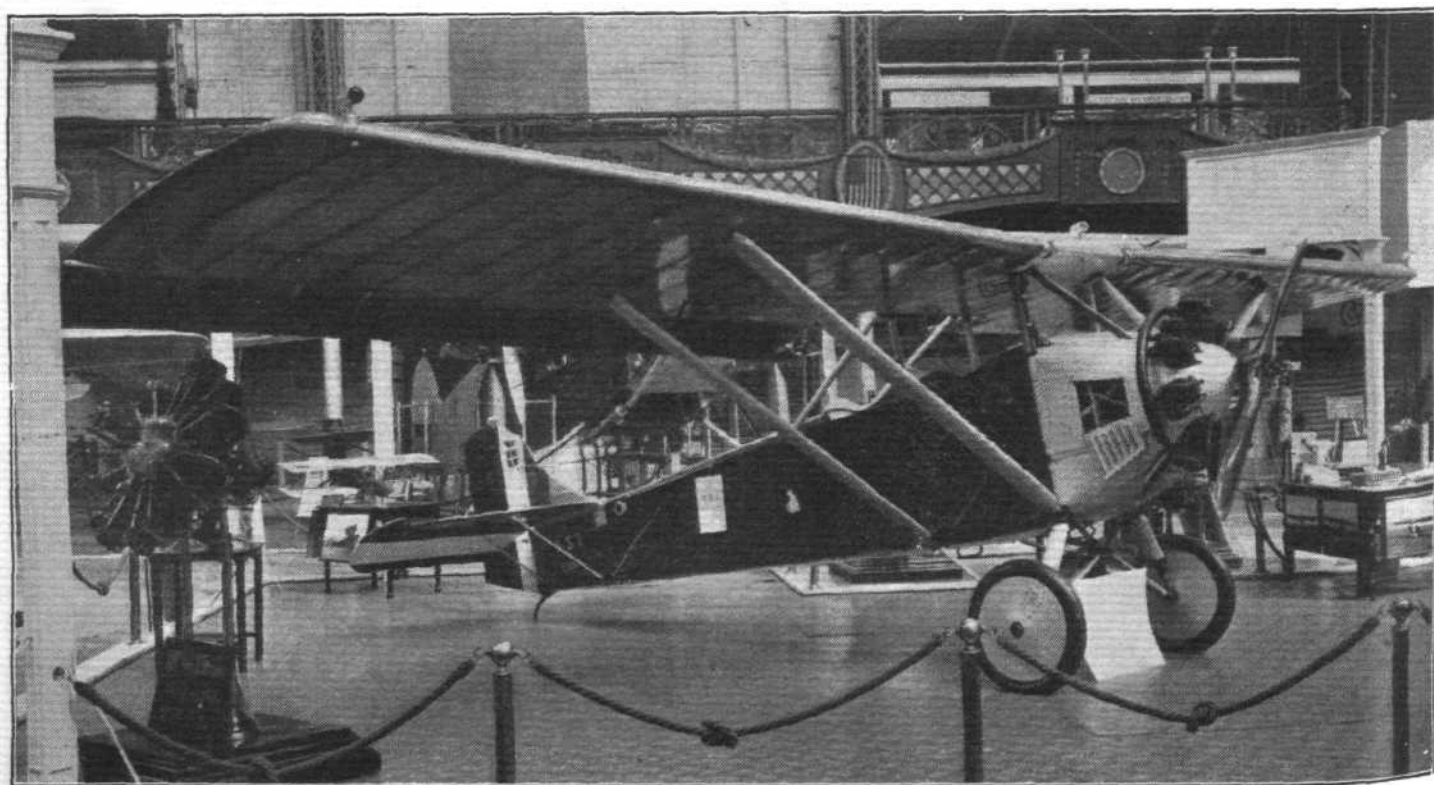
If desired, floats can be fitted, making the machine into an attractive little seaplane.

Several novel features are incorporated in this machine, and the workmanship is of the standard one naturally expects from the Italians. An interesting fitment is an arrangement whereby the instructor can disconnect the pupil's control column, so that in case of emergency he can assume complete control of the machine.

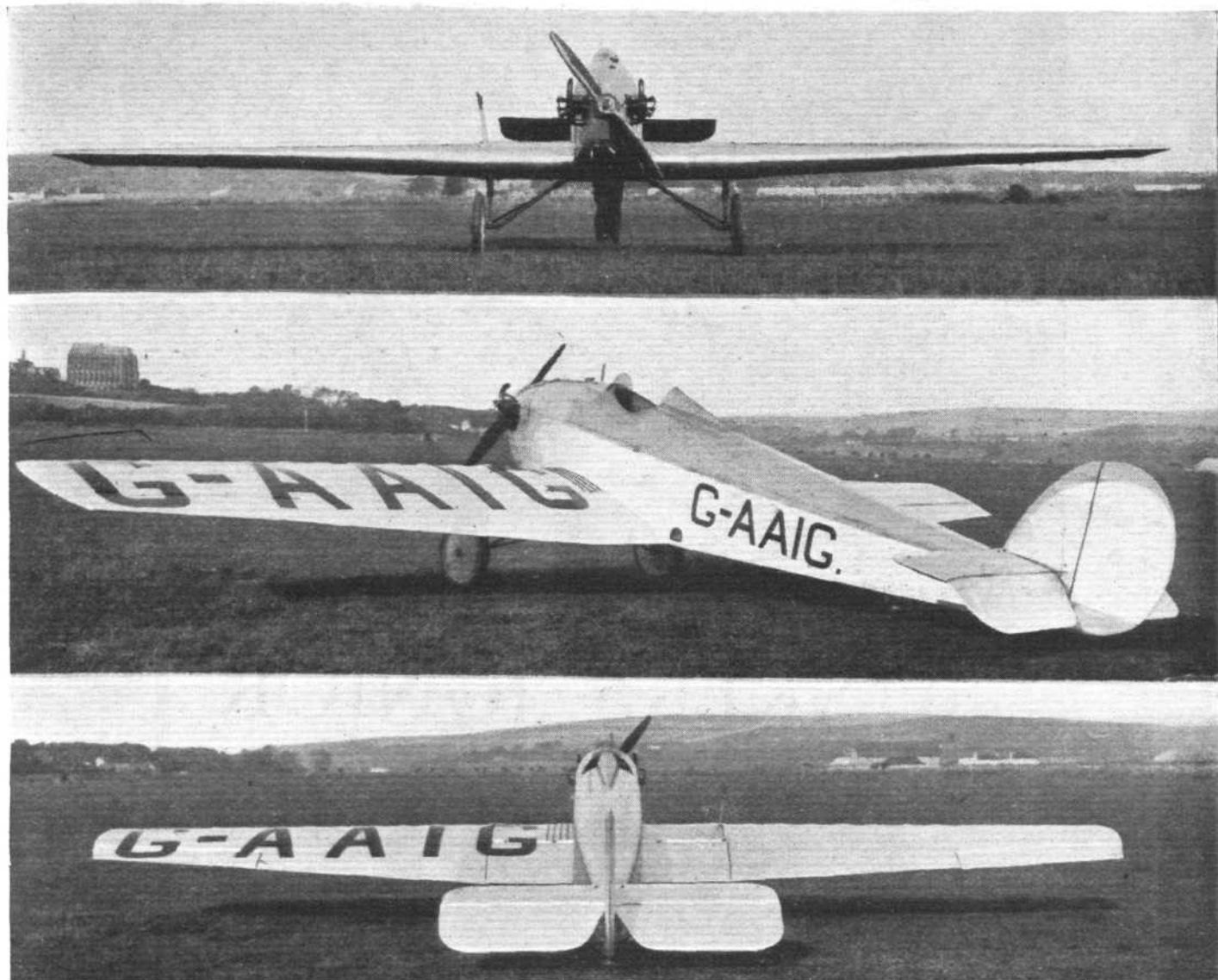
Doors are provided for getting in and out of the cockpits, and the seats are designed to take the "Salvator" parachute if required, a cushion taking the place of the parachute if this latter is not carried. This parachute is the back type, and when in use the parachute forms a pad for the back.

The forward cockpit is also designed to allow the fitting of an extra seat, so that the machine may be used as an occasional three-seater.

The engine normally fitted is the Fiat-type A.50 seven-cylinder, radial air-cooled of 85-95 h.p., and this is mounted on a duralumin plate on the nose of the machine. The coupé top is detachable, and the photograph above shows the seaplane as an open machine.







## HOBO

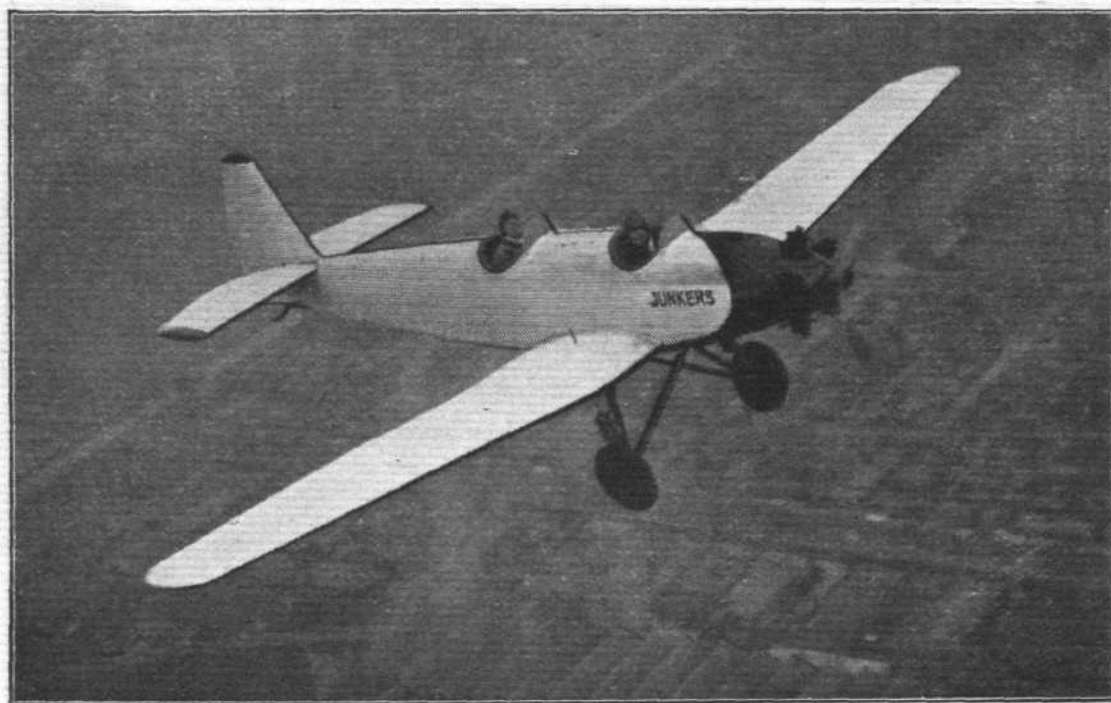
**A**NOTHER machine of the smaller class of private owners' aircraft, which has been recently designed, is the Hendy Hobo. The chief idea of this type of machine is that it should provide people with a means of flying at a minimum of cost.

Whether or not this type will have a wide appeal is one of the many points which may be decided during the forthcoming season, but on the face of it, it certainly would appear that there must be a demand for a small, very cheap, single-seater machine. There should be many who wish to qualify for their "B" licences, a matter which necessitates a minimum of 100 flying hours as an "A" licensed pilot, and these hours could well be put in on such a machine; and then for the man who has neither the time nor money to make long cross-country journeys in a larger and more costly machine, such a machine as the Hobo would enable him to fly from his own aerodrome, and to get the benefit of being in the air at even a cheaper cost than running a motor-cycle.

The Hobo has many novel features, and though not yet in production it promises to be eminently suited to this sort of work. It is robustly built with three-ply wood covered fuselage, so that there should be no trouble with it getting easily damaged. The undercarriage is very wide, and the machine is exceptionally stable on the ground when standing



in a wind or when taxiing. The engine is the simple and well-tried-out A.B.C. Scorpion of 35 h.p., and though only fitted with one double-spark magneto it has proved quite reliable. The Hobo was built by the Hendy Aircraft Co., Shoreham-by-Sea, Sussex, on the aerodrome of the Southern Aircraft Co., Ltd.



## JUNKERS JUNIOR

**I**N as much as it is the only entirely metal machine at present on sale, the Junkers Junior stands in a unique position in the light aircraft world. By entirely metal we mean that both the fuselage and lifting surfaces are constructed of, and covered with, metal. This form of construction eliminates a very large proportion of the difficulties and disadvantages which go hand in hand with most other forms of construction. Further, it is a full cantilever monoplane so that besides the advantages of metal construction, it can claim the added advantages of having no bracing wires or struts which may require adjusting or truing up in any way. When suitably protected with varnish or other anti-corrosive substance, it is certainly one of the

most weatherproof forms of aircraft construction, and should give the private owner no trouble on this score.

The low wing design has very distinct advantages from the point of view of the pilot, as his outlook is unrestricted in all directions.

The metal used is mainly duralumin, so that though the wing coverings are thin and light they are perfectly strong, and will stand all the usual reasonable amount of knocking about that such parts are subject to.

The wing construction is on the four-spar principle with easily detachable screw couplings connecting the wings to the fuselage. The fuselage is of the monocoque type, with tubular frames, and a corrugated dural skin covering. The seats are arranged in tandem with the pilot behind, and there are two luggage lockers, one between the cockpits, and one behind the pilot. The tail plane is adjustable, and all control surfaces are mounted on ball bearings. The elevators and ailerons are controlled by push rods and the rudder by cables. The engine fitted as standard is the Armstrong-Siddeley Genet, while an engine driven pump looks after the fuel supply from the two main fuel tanks, which are in the centre-section of the wing either side of the fuselage with an emergency tank of 2½ gallons in the fuselage, which will feed the engine by gravity, and can be filled from the main tanks by a hand pump. The total fuel capacity is 18 gallons.

The sole concessionaires for the British Isles are Trost, Bros., of 104, Victoria Street, London, S.W.1.

Two main models are marketed, the Touring Model, which is delivered at London ready to fly away for £840, and the Club Model, which is the same, with the addition of dual controls and an extra set of instruments in the front cockpit, this latter cost £885.

Like all Junkers machines, the Junior is fairly heavily loaded, so that it is a very comfortable machine to fly in bumpy weather, and in landing it "stays put" in a very satisfactory manner, and for those who are prepared to pay for the advantages of metal construction there is no doubt that it should prove eminently suitable as a private owners' machine.







## JUNKERS F 13

**T**HE Junkers F.13, though in the luxury class as a private owner's machine, has already found one owner in this country, as the Hon. F. E. Guest, the chairman of N.F.S., maintains one for his own use.

Junkers machines are really too well known to need much description and, structurally, the F.13 is just the same as the Junkers Junior, which has already been described. The same all-metal cantilever principles are adhered to and also all the other Junkers details which have gone so far in building up this form of machine. The F.13 is a cabin machine with ample accommodation for four passengers, and in front of the cabin is the pilot's cockpit, with two seats side by side and with dual controls fitted.

A similar version to this machine, but with the cabin stripped, is used for freight, and it was in a machine of this type which Herr Köhl, Baron von Hünefeld and Major Fitzmaurice flew from Dublin to Labrador in April, 1928.

The pilot's cockpit is not enclosed, but so carefully has the design of the nose of the machine been carried out that there is no draught at all, and one has the added advantage of being

able to dispense with windows, which might possibly become fogged in bad weather.

The passengers' cockpit is extremely comfortable, and this, added to the inherent advantages of the low wing type of machine, make the F. 13 certainly one of the most comfortable machines we have ever flown in.

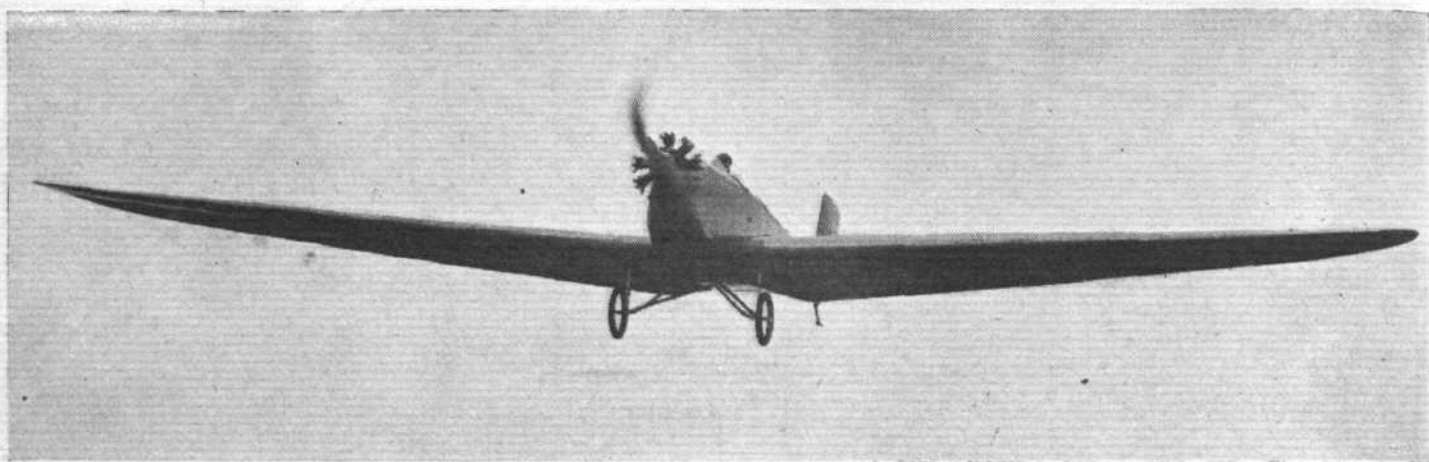
Large luggage accommodation is arranged behind the cabin in a compartment which has its own door on the side of the fuselage.

The engines fitted are either the Junkers 280-310 h.p. L5 water-cooled or the Jupiter 425 h.p. air-cooled radial. The former is an exceptionally quiet running engine, and when travelling in this machine so fitted there is no difficulty experienced in conversation between the passengers.

Trost Bros., of Victoria Street, London, are the agents for these machines over here, and they keep one or two at Croydon for taxi work, where they have been doing quite a lot of work during the last year.

The general equipment of the Junkers is very thorough indeed, and many extra instruments are fitted as standard. There is a centralised fire-extinguisher system which has nozzles directed to vital parts of the machines, so that a fire can be extinguished immediately.





## KLEMM

**T**HE Klemm L.25 two-seater light monoplane is being handled in this country by S. T. Lea, of 141, New Bond Street, London, W.1. It is, of course, a German-made machine, and comes from the Leichtflugzeugbau Klemm G.m.b.H. Böblingen, Wurttemberg. It was originally designed as a very light machine with the 40-h.p. Salmson radial engine, and in this form has achieved a large number of notable performances. Many machines have been sold in this country with this little engine and its performance with two persons is astonishing. Our upper photo shows this type.

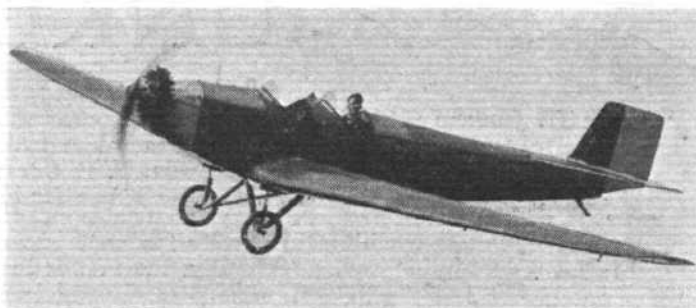
Lately, however, a slightly larger model has been made to take the 65/82-h.p. Siemen's engine, or the 85/95-h.p. "Cirrus III" engine. A three-seater version with this latter engine is now in this country, and is said to have a very good performance indeed. It is shown below.

Arrangements are now being made to manufacture the "Klemm" in this country, for which purpose a company has been formed, and factory sites are being considered.

As a low-wing monoplane, the "Klemm" offers an exceptional view, both for the pilot and the passenger, and it is a very comfortable machine. The low wing loading and consequent low landing speed rather tend to make it not quite ideal on a very bumpy day, but under normal conditions it is extremely easy to fly. The whole machine is of ply-wood construction, so that there is never any truing up to be done. The wings are quickly detachable by means of vertical pins at the roots, and when detached, they may be stowed in sockets provided so that they lie vertically against the sides of the fuselage. This is claimed as a very simple operation,

and one that can be done in a very few minutes, and it certainly has the advantage that with the wings in this position, the machine can be stowed in a very narrow shed.

The "Klemm" is the best known of the many Continental-built light planes, and has proved itself in every way a private-owner's machine. The ply-wood construction ensures

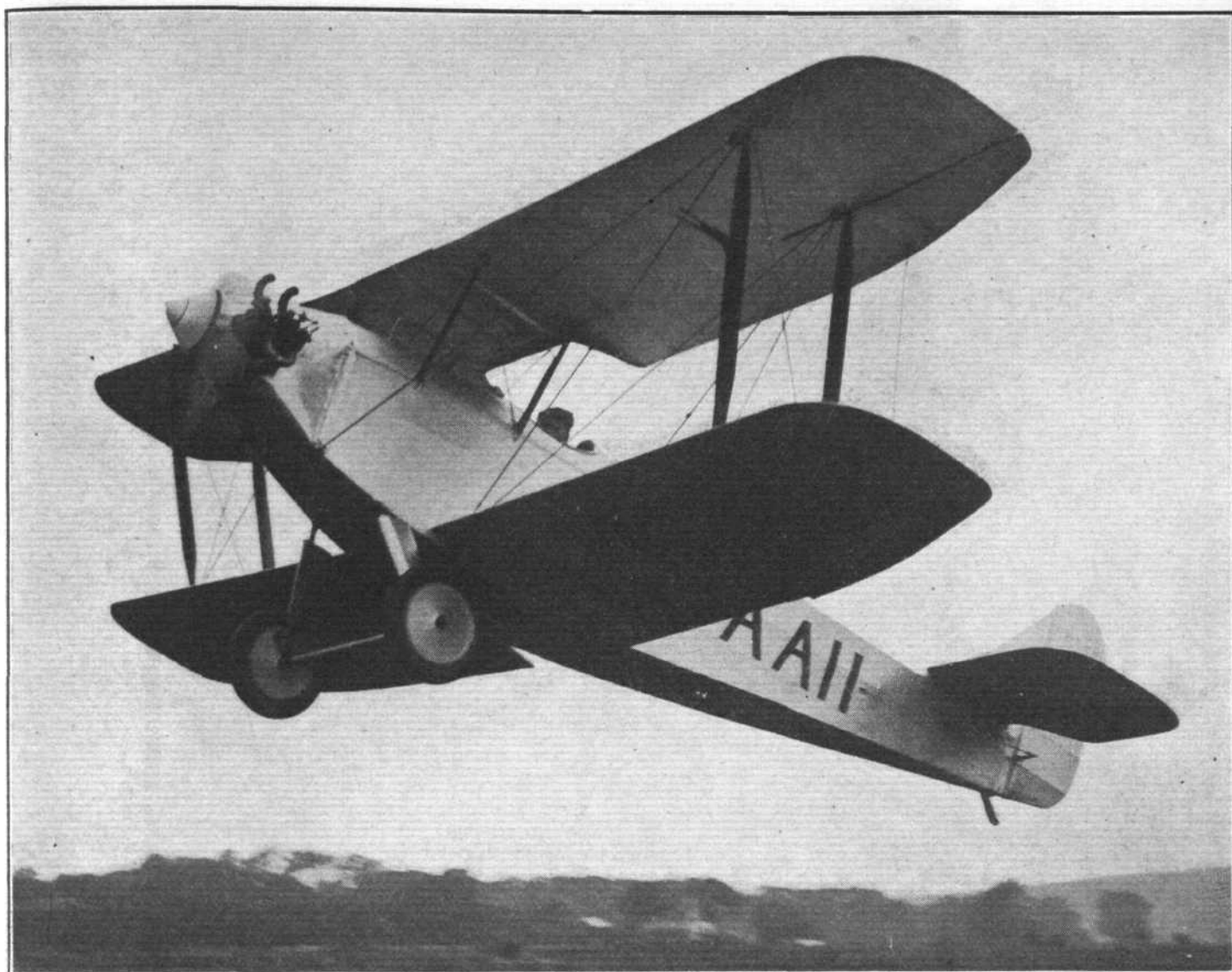


that the machine is sturdy, and with even the tail surfaces thus covered, there is very little that can be damaged by inquisitive spectators.

Its large span makes it an efficient flying machine with low induced drag, and it is quite controllable below the stalling point, so that private owners need have no fear of stalling inadvertently.







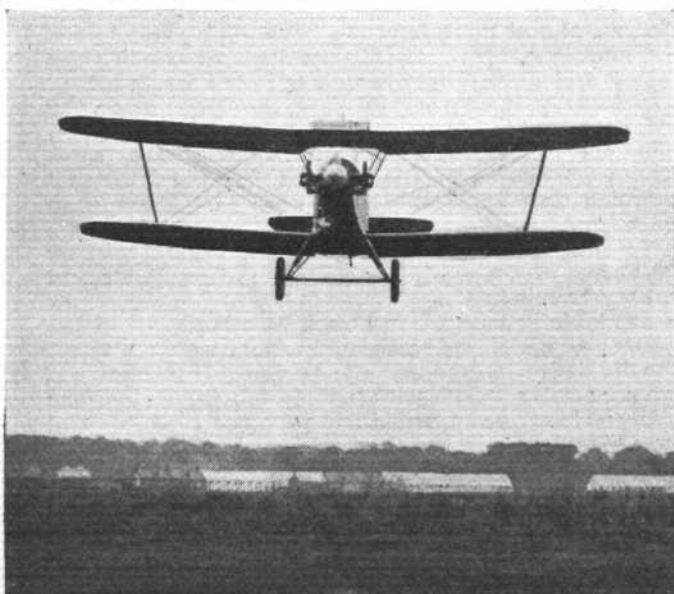
# MARTLET

**R**ECENTLY produced by the Southern Aircraft Co., Ltd., of Shoreham-by-Sea, Sussex, this is a most fascinating little single-seater.

The machine was originally designed from the Avro "Baby," and many modern features have been included. The top centre section has been redesigned to carry the fuel tank, and the tail units are entirely new. The undercarriage, which has proved very satisfactory, is a combination of oleo and coil-spring shock absorbing gear, which is the patent of Mr. Basil Henderson, of the Hendy Aircraft Co., also of Shoreham.

The Martlet was demonstrated at many meetings last year, and very greatly impressed the onlookers with its manoeuvrability; its speed range seems very large, and though its top speed, for such a machine, is very impressive, its landing speed is quite low. Control throughout the whole range is very good, and for the pilot who likes something which he can throw about after the style of a single-seater fighter, the Martlet must have its appeal. The A.B.C. Hornet engine appears to suit this machine well and to run smoothly.

It is now properly on the market, and is certainly a good type for those who want something a little different and do not mind a single-seater.





# MOTH G

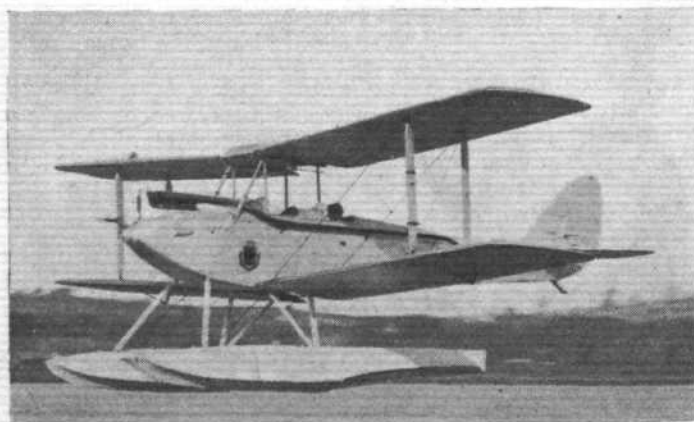
**I**T seems almost unnecessary to have to give any details of the Moth, for it is probably the most popular and most widely-used light aeroplane in the world today. Actually it can be said that the Moth made the light aircraft movement in England, and, in fact, in many parts of the world, but at the same time it must be borne in mind that it was the "Cirrus" engine which first made the Moth possible. Apart from its use in clubs for instruction, and by some 137 private owners in this country alone, the Moth is widely used by the Air Forces of the world for communication flights and for primary training.

It is available in many forms, such as a landplane fitted with a normal wheel undercarriage, which, as a standard, is of the divided-axle type and stands a remarkable amount of rough use; as a seaplane with twin floats; for use on snow with skis, and lastly as an amphibian with the single central float type of undercarriage with wheels which may be lowered when landing on land, as has been developed for the Moth and such like aircraft by Short Bros., of Rochester.

The Moth is a small single-bay machine with two cockpits in tandem, and if desired may be fitted with a Coupé top which practically turns it into a cabin machine. The engine most fitted now is the "Gipsy," but a very large number have been sold with "Cirrus" engines, and also the Armstrong-Siddeley "Genet," this latter was the type used for a display of advanced aerobatics and inverted flying at the R.A.F. Display at Hendon.

The Moth has lately been redesigned with an all-metal fuselage, but retaining the wooden wings which are, of course, designed to fold very easily.

The Moth is now being built under licence in America and France, and the De Havilland Co. have works in Canada, and Australia, while agents are to be found in nearly all countries.







## MOTHS III & VI

**A**FTER having produced Moth biplanes for a number of years, and made a great success of the type, the De Havilland Aircraft Co., Ltd., Stag Lane Aerodrome, Edgware, Middlesex, has turned its attention to the monoplane type, and is marketing this spring two distinct models, the "Moth Three" and the "Moth Six," the former being a 2-3 seater and the latter a 4-6 seater.

The "Moth Three" (shown in the photograph above) is designed for normal use as a two-seater, but provision is made for fitting a third seat, should an owner desire to take two passengers occasionally. The machine has a welded steel tube fuselage but wooden wings. It is a monoplane of the type which the Germans call "shoulder-decker" and is characterised by the fact that the wing does not run across the top of the fuselage which is provided with roof windows, thus improving both the view and the lightness of the cabin. The cabin itself is liberally provided with windows, and the view in all directions is excellent.

The power plant is a "Gipsy III" which is an inverted "Gipsy II." Apart from the exceptionally fine view forward and downward which this engine gives, the inversion of the engine has resulted in a remarkable reduction in engine

noise. It is, in fact, perfectly easy to carry on a conversation in the cabin.

A novel feature of the "Moth Three" is that the machine is fitted with air brakes. The telescopic struts of the undercarriage are so supported at their ends that they can be rotated through an angle of 90 deg. The extra drag which the struts cause is sufficient to alter the gliding angle from about 1 in 11 to about 1 in 7, and thus it is made much easier for the pilot to bring the machine into a small aerodrome. The effect is very like the application of brakes on a car. One can distinctly feel the machine slow up as the air brakes are applied. The "Moth Three" will be supplied both as a landplane and as a seaplane.

The "Moth Six" (illustrated below) is also produced both as a landplane and as a seaplane. Moreover, it can be had either fitted with the Armstrong Siddeley "Lynx" engine, or with the Wright "Whirlwind" of 300 h.p. in both versions.

Normally the "Moth Six" is intended for use as a four-seater, when the cabin has quite exceptional leg room, etc. When the two extra seats are fitted, the space is naturally not quite so ample, but still sufficient. Constructionally the "Moth Six" is somewhat similar to the "Moth Three," with welded steel tube fuselage and wooden wings.





## MUSSEL

**F**ROM the design point of view the Short "Mussel" is one of the most interesting private owner's machines at present on the market.

It has been fitted as a seaplane, a landplane, and now the most recent change is as an amphibian.

Built by Short Bros., of Rochester, we naturally expect a seaplane and it was in this form that the "Mussel" was first produced. It is a low-wing monoplane and is built entirely of duralumin. The hull is a form which has so successfully been developed by Short's, and is really a metal tube. The actual construction is almost monocoque with very light internal structures and a duralumin skin making the whole oval in cross section and tapering toward the tail. The wing is built in two halves and is also of metal, the two halves being attached to the fuselage at their roots by means of detachable joints and braced by struts above the wings to the top longerons. The spars are built-up box spars and the ribs are of duralumin tubing.

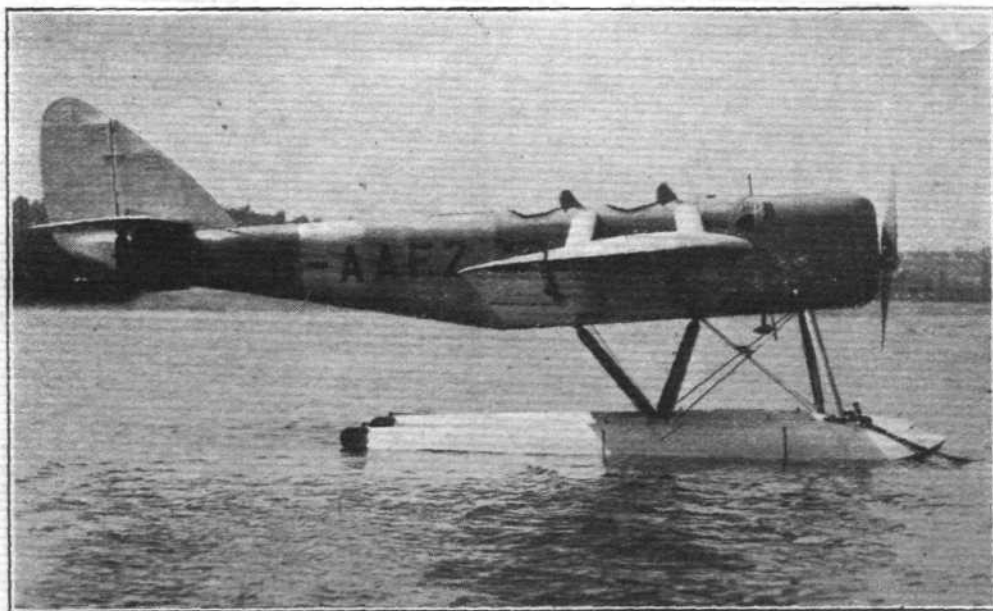
This form of construction has proved extremely successful and the result has been to produce one of the smoothest-running machines on the market. When flying there is a very noticeable lack of vibration and in the open passengers' cockpit it is perfectly easy to write with a writing pad held on one's lap.

The latest amphibian version is fitted with the amphibian undercarriage which was originally developed for the "Moth." Short Bros. have, of course, made an entirely successful job of this and with the single main float the machine has been found to handle very well on the water. The wheels

are raised by a simple wheel in the pilot's cockpit and the reduction in performance due to having the added refinement of this undercarriage has been found to be very small.



An interesting point about this undercarriage is that at the heel of the central float is a small rudder which is used, as a rudder, when on the water and also acts as a sprung tail skid when on land.







## PHOENIX

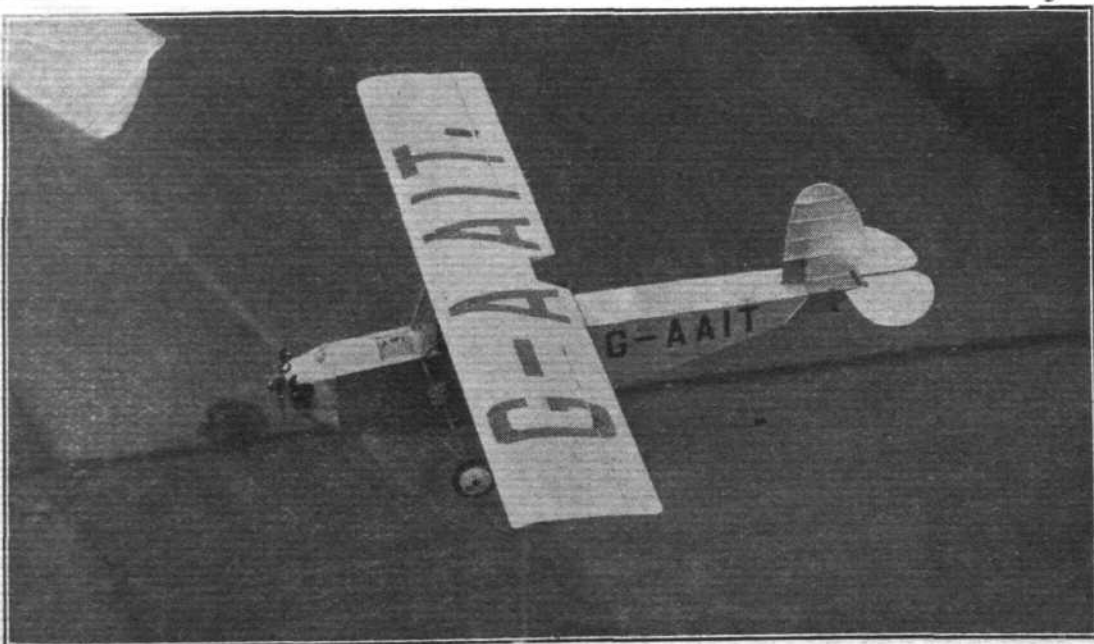
**T**HE Phoenix, which is being developed by Boulton and Paul's, of Norwich, is at present only in its experimental state, and must therefore be treated not as a machine which is available for the public, but as one out of which may grow a machine, having very especial features which may make it stand alone in the light aircraft market.

When the Phoenix does come on the market it will be as a two-seater of all-metal construction with

folding wings. The view will also be designed to be better than is usually found in existing light aircraft, and the price it is hoped to keep very low indeed.

As shown at Olympia last year the Phoenix was a small braced parasol monoplane fitted with the A.B.C. "Scorpion" engine. Since this a second edition has been flying very successfully with a 40 h.p. nine-cylinder, air-cooled, radial Salmson engine, as shown above.

The rudder was shown as identical with each elevator flap so that the number of spares will be reduced.





## ROBIN

**T**HE Robin is the only representative of its class on the market. As a single-seater cabin machine it has an appeal to those who wish for a small machine with a reasonably high performance, but who at the same time do not wish to give up the comfort of the cabin.

Built by A.B.C. Motors, Ltd., of Walton-on-Thames, it is, as one would expect, fitted with the A.B.C. Scorpion engine.

It is one of the neatest small cabin machines at present available, and though there will always be a division of opinion as to the desirability of a single-seater cabin machine, there must at the same time be a small circle of pilots whose flying is mainly done for business, and who travel alone, and for such as these the Robin should make an admirable machine.

It is one of the prettiest little machines we have seen, and will undoubtedly have an appeal to lady pilots; but in its present form it would seem as if it is just a little too light on the controls for anyone except an experienced pilot to handle with any degree of comfort. However, teething troubles are to be expected on any new machine, and by the time Robins are in production we may expect such things to have been modified.

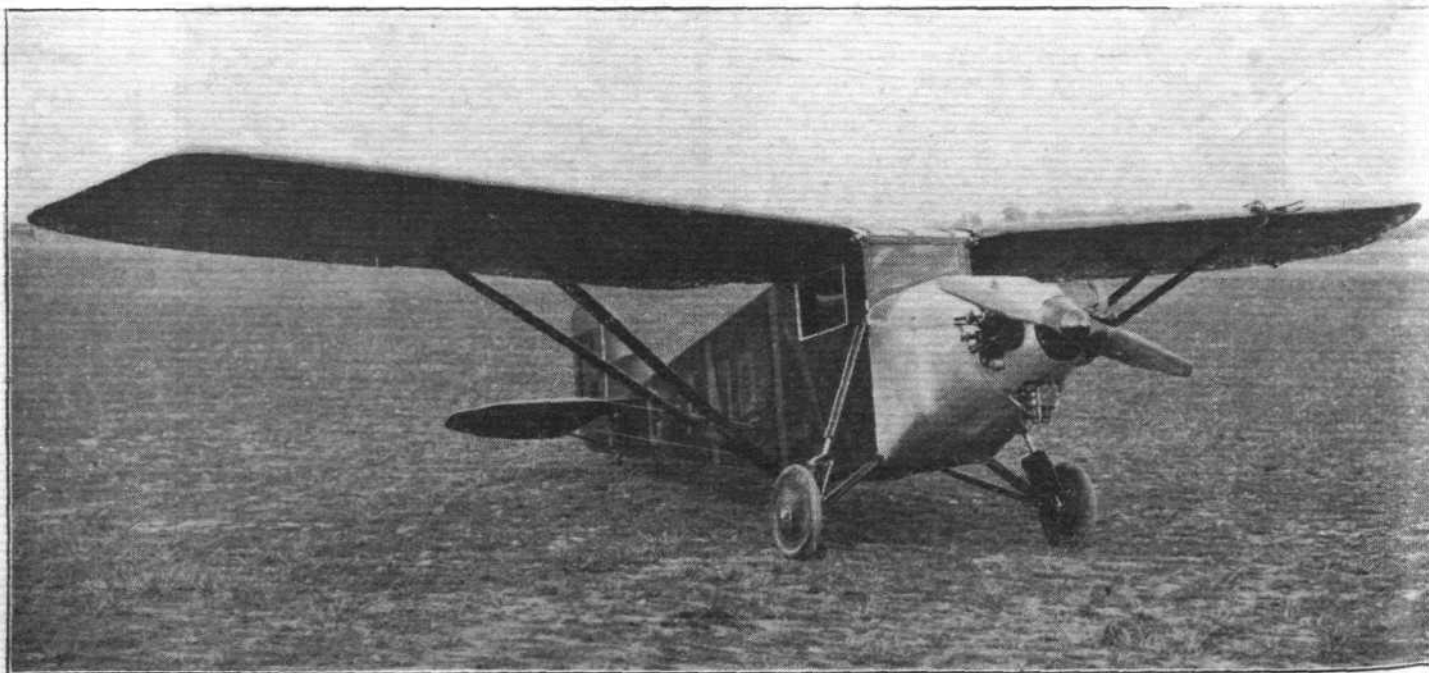
The cabin is entered through a door on the starboard

side, and the skylight above the cabin is made to hinge upwards, so that when getting in the pilot will have more room for his head, and when he is settled he can fasten down this skylight, which incidentally allows a clear view upwards and backwards, making the cabin feel very light and airy, eliminating any feeling of being shut in. The side windows and those in front can be slid sideways so that the pilot can always look out without looking through glass should he desire to do so.

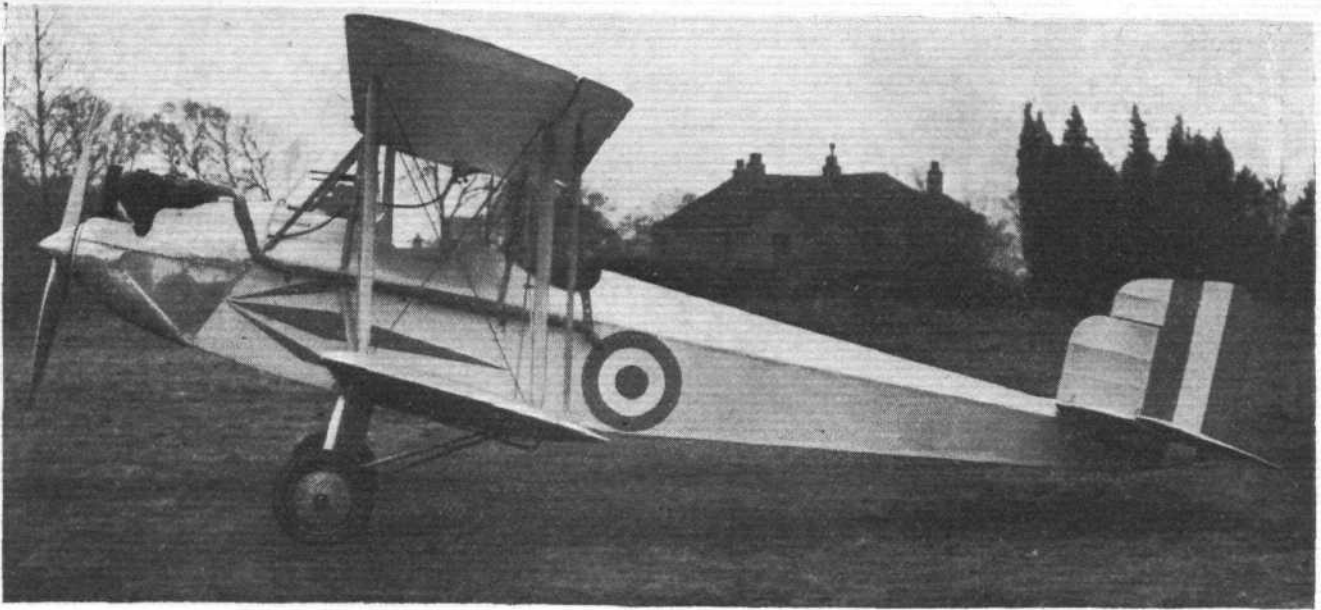
Behind the cabin is a roomy luggage locker, which has an access door through the top of the fuselage. The fuselage is a boxed plywood structure with light internal stringers and formers so that its strength to weight ratio is high.

The wing spars are spindled I-section spruce, and the ribs are built up in the form of N-girders, with spruce of square cross-section. The wing bracing is by a pair of vee-struts on each side, and the rear hinge of the wing allows them to be folded.

The undercarriage looks somewhat diminutive, but is well designed, and has a wide track which should make the machine steady on the ground. The compression leg is made with rubber rings around steel crutches covered in a streamline casing.







## SPARTAN

**S**IMMONDS AIRCRAFT, LTD., of Southampton, have built in the Spartan an aircraft which, though it appears more or less the same as several other light aircraft, has at the same time a very radical difference, and this is its interchangeability. The wings have been specially designed so that any wing will fit in any position. This has been achieved by using a wing section having both upper and lower surfaces of equal curvature and by careful design of the wing root fittings. The advantage of this is that where, say, a club is using several of these machines for training purposes, or where a dealer carries spares of these machines for ready use, there is no need to have four different kinds of main planes as the one standard type will be ready for use as a spare for any of the four positions.

But the ingenuity of Mr. Simmonds did not stop at the planes, and was extended to the tail unit as well, and here we have the vertical fin so designed that it can also be used for either end of the tail plane, and the elevators are identical with the rudder.

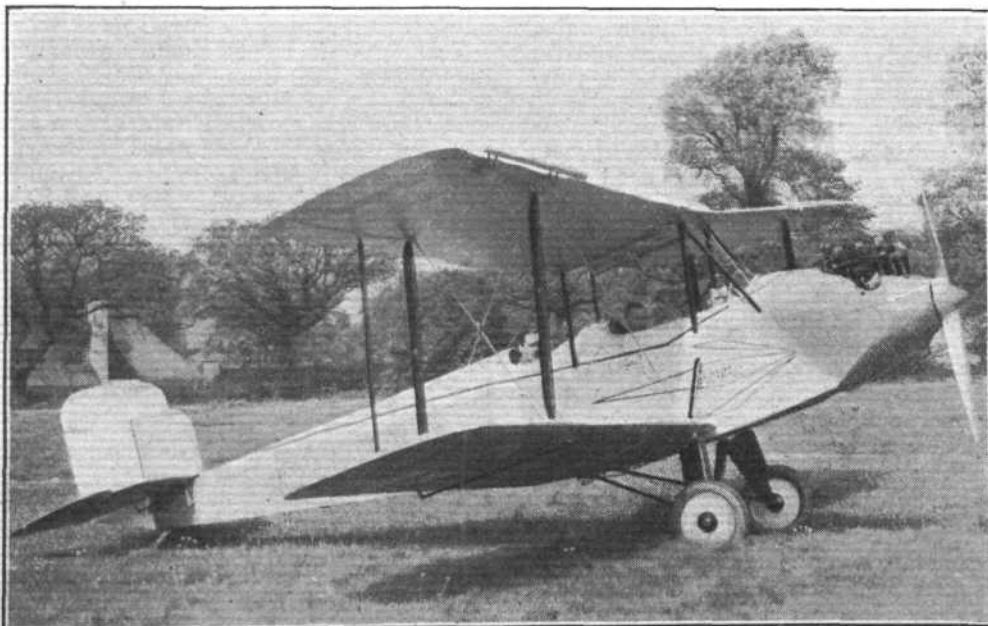
To revert to the main planes again, we find that the inter-plane struts are exactly the same, as are also the flying and landing wires. The incidence bracing has so far defeated the designer's powers of simplification, but possibly by means of some simple form of adapter it will be found that one length of wire can be used.

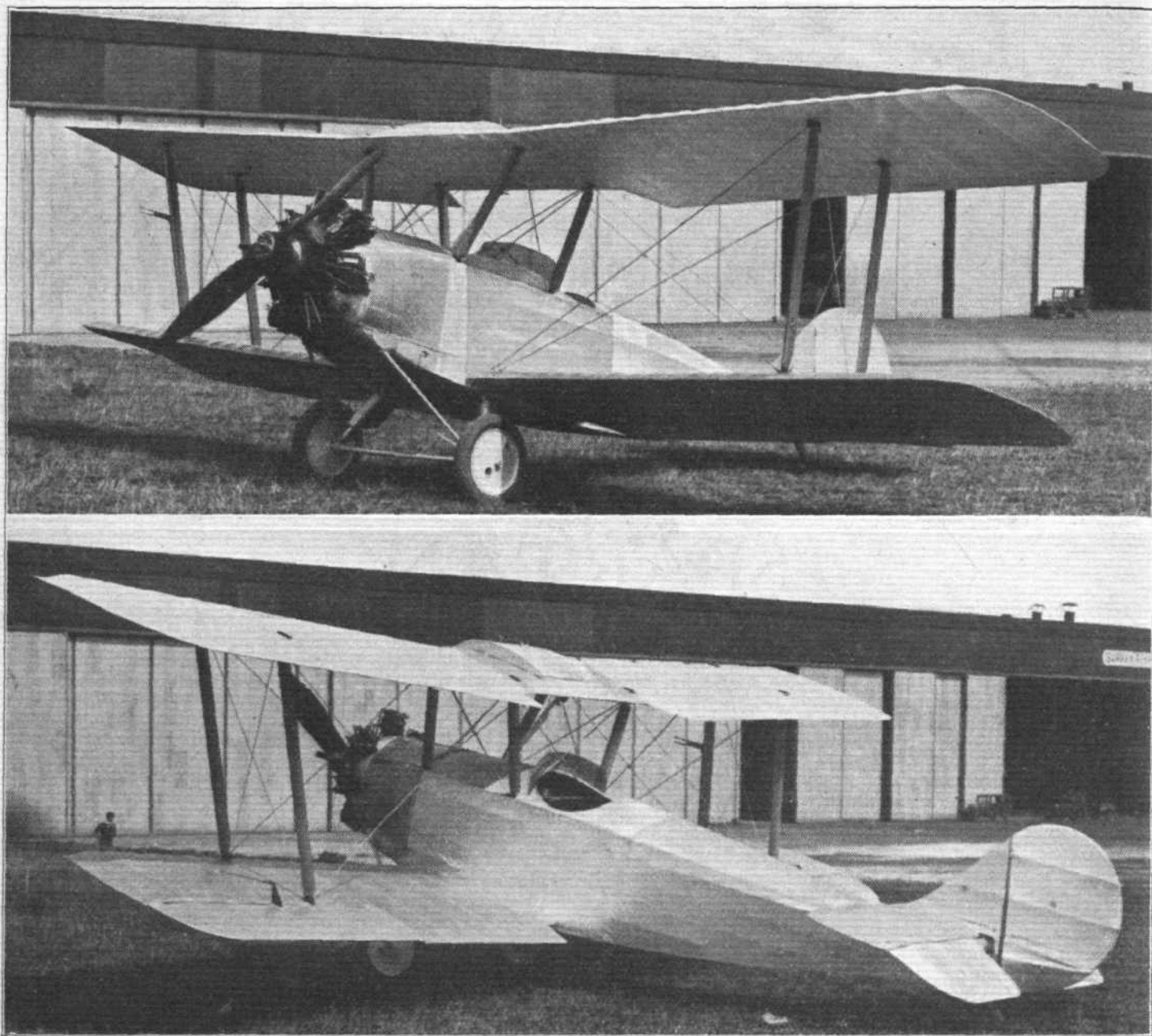
In the undercarriage the same idea has been carried on, and here we have one wheel with its compression leg, radius rod and axle serving for either port or starboard sides.

One would naturally think that a very great deal must have been sacrificed in order to obtain this interchangeability, but this is not the case, and though, like all new aeroplanes, the Spartan has had its share of teething troubles, it is generally accepted to be a very good flying machine.

Two main types are being marketed, and both may have the Cirrus-Hermes or Cirrus III engine. The former is the standard two-seater open cockpit type, while the latter has had the fuselage slightly enlarged and the front cockpit has been arranged to take two passengers. A door is fitted in the side of the fuselage for access to this cockpit, and as can be seen in the lower photograph, the passengers sit one in front of the other. The rear cockpit also has its door, and behind it is situated a very roomy luggage locker, which has been designed long enough to carry comfortably such things as golf clubs, fishing rods, or guns.

Very rapid advance was made with the production of the Spartan when the factory was first started, so much so that orders very much overran the supply, but more recently considerable outside financial interests have come in to the firm, and during the coming season we may expect to see the Spartan in evidence wherever men fly, its obvious advantages having already appealed to many owners.





## A.L.I.

**T**HIS machine has been built by Surrey Flying Services of Croydon, primarily as a machine which will stand any amount of knocking about in the hands of a private owner, and will at the same time be excellent for training purposes.

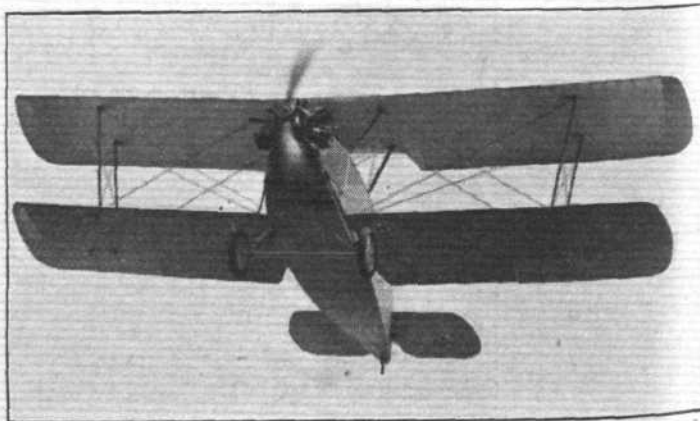
The side-by-side seating which is provided is one of those things on which pilots are equally divided as to its desirability; many maintain that a pupil is not good when he is sitting alongside the instructor, and they also say that nothing would induce them to sit alongside a nervous pupil, who might clutch at them. Personally, we fancy that it would be safer to have a clutching pupil alongside one where one could retaliate than to have him in the front cockpit, where he might clutch the controls, and have a wrestling match over them with the wretched instructor. However, for sheer sociability, there can be no comparison between the two types, and provided the performance which is necessary in modern machines can be obtained with the side-by-side seating, this would be the type we should vote for every time.

In the A.L.I. an excellent performance has been obtained even with an engine of only 90 h.p., and a radial at that, so that in this matter it becomes comparable to other light aircraft.

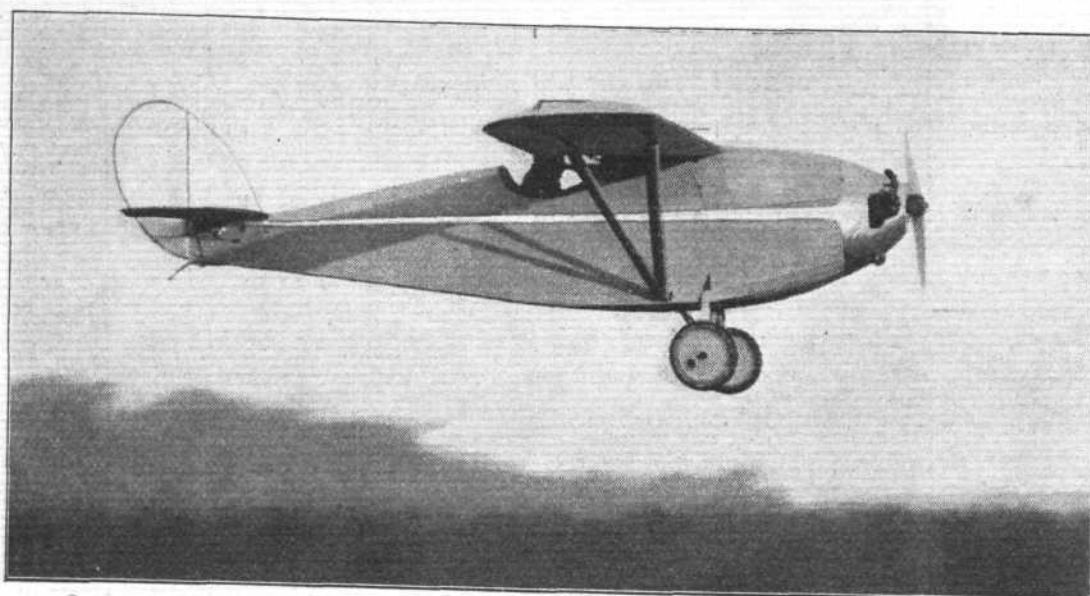
In general construction it is very "Avro," that is to say, it utilises ash longerons with piano wire bracing, spruce struts, and flat very simple wiring plates; the interplane struts are of spruce, and are bedded into steel sockets. The main

planes are all of spruce and three-ply construction, with fabric covering.

This form of construction, especially the fuselage, has been proved, by all the "joy-ride" Avros now in use, if by nothing else, as particularly suitable for hard work, and repairs are easily carried out. Such a fuselage has distinct advantages over the more usual ply-wood covered type, and the fact that it emanates from the Surrey Flying Services should prove that its conception must be very practicable.







## SWIFT

**F**LT.-LT. N. COMPER, when he left the R.A.F. and formed the Comper Aircraft Co. with its works at Hooton, near Birkenhead, had already had experience of designing and building very light aircraft, as he designed and built the series C.L.A.1-4 for the Cranwell Light Aeroplane Club.

The idea lying behind the Swift is that high power is not necessary for high performance, and also that there is a market for the very light and cheap single seater, provided it has a good performance.

The Swift is the first machine from this new factory, and so far gives promise of more than fulfilling the expectations of its designers.

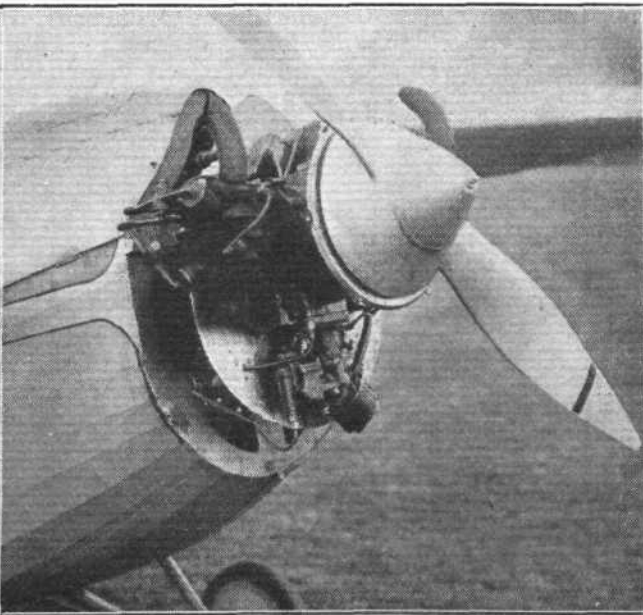
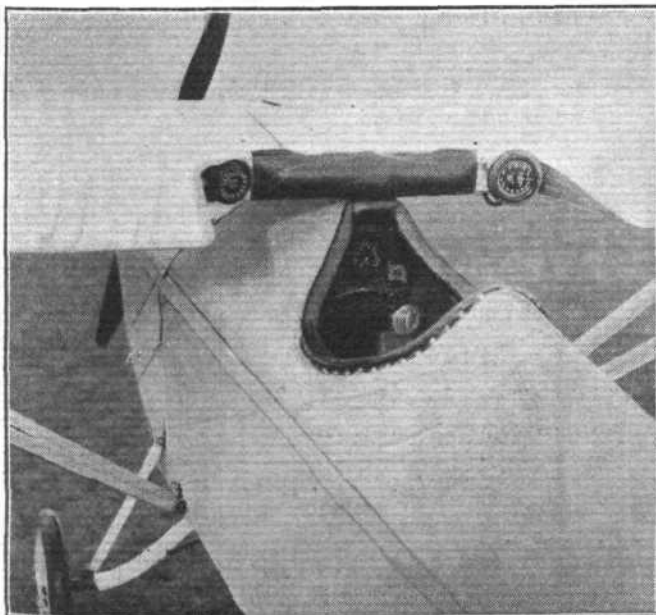
It is a machine which looks far better than drawings would lead one to suppose, and one that should have a very great appeal to those who wish to own a single seater with a particularly "snappy" performance. There will undoubtedly always be a demand for the single seater, just as there is a demand for the sports model motor-cycle and the Swift, with its top speed of about 105 m.p.h. can certainly claim to be a sports model in the very light class. The small engine, an A.B.C. "Scorpion," will make it an economical machine to run and whether for merely sporting purposes or for those who wish to get in sufficient flying hours to qualify for their "B" licence, it should prove a good proposition.

Among the many points of good design are, firstly, the attention which has been paid to the pilot's view, and though the means of obtaining this appear at first sight somewhat

unorthodox, they are very successful. Then, secondly, the undercarriage has been designed to give a minimum of drag, and all the shock-absorbing mechanism is carried inside the



fuselage so that the part of the compression leg which is usually outside in the slipstream, and is rather large, is, in this case, a normal thin strut, and therefore offers very little resistance.



## AIRCRAFT FOR THE PRIVATE OWNER

NAME.	TYPE.	No. of Seats.	CONSTRUCTORS.	ENGINE.	Normal h.p. Total.	Overall Length.	Wing Span, Top.	Wing Chord, Top.	Wing Area, Total.	Area, Ailerons.	Area, Fin.	Area, Rudder.	Area, Tail Plane.	Area Elevators.	Weight, Tare.	Weight, Fuel.	Weight, Oil.	Disposable Load, Ex-Fuel.	Gross Weight.	Wing Loading.	Power Loading.	Maximum Speed near Ground.	Cruising Speed.	Minimum Speed.	Initial Rate of Climb.	Service Ceiling.	Duration.	Range at Cruis- ing Speed.	Price.
						ft. in.	ft. in.	ft. in.	sq. ft.	sq. ft.	sq. ft.	sq. ft.	sq. ft.	sq. ft.	lb.	lb.	lb.	lb.	lb.	lb./sq.ft.	lb./h.p.	m.p.h.	m.p.h.	m.p.h.	ft./min.	ft.	hr.	m.	£
Avian ..	B	2	A. V. Roe & Co., Ltd.	Genet Major ..	100	24 3 28 0	4 9	245	17-0	3-7	7-9	19-7	13-0	967	178	20	320	1,485	6-06	14-9	103	90	40	650	13,000	4	360	895 1	
Avian ..	B	2	A. V. Roe & Co., Ltd.	Hermes ..	105	24 3 28 0	4 9	245	17-0	3-7	7-9	19-7	13-0	1,005	178	20	320	1,523	6-22	14-5	103	90	43	700	13,500	4	360	895 1	
Avro V ..	M	5-6	A. V. Roe & Co., Ltd.	3 Genet Major	300	35 9 47 0	8 9	330	26-0	—	22-2	—	42-7	2,850	630	—	1,150	4,630	14-1	15-4	113	95	58	600	12,000	4½	400	3,950 1	
Bluebird IV ..	B	2	Designed by Blackburn	Cirrus III ..	95	32 2 30 0	4 6	246	23-0	—	11-0	15-0	16-0	1,041	158	20	375	1,594(a)	6-48	16-8	100	85	44	700	15,000	5-6	480	795	
Bluebird IV ..	B	2	Aeroplane Co., built by	Gipsy I ..	100	32 2 30 0	4 6	246	23-0	—	11-0	15-0	16-0	1,041	158	20	375	1,594(b)	6-48	15-9	105	87	44	730	15,000	5-6	490	795	
Bluebird IV ..	S.B.	2	Saunders-Roe, and sold	Cirrus III ..	95	32 6 30 0	4 6	246	23-0	—	11-0	15-0	16-0	1,117	158	20	347	1,642	6-68	17-3	98	85	45	700	13,000	5-6	480	1,090	
Bluebird IV ..	S.B.	2	by Auto-Auctions, Ltd.	Gipsy I ..	100	32 6 30 0	4 6	246	23-0	—	11-0	15-0	16-0	1,117	158	20	347	1,642(c)	6-68	16-4	103	87	44	730	13,000	5-6	490	1,030	
Breda ..	M	2	Soc. Breda ..	Gipsy I ..	100	22 4 37 7	—	236	—	—	—	—	—	968	—	—	—	1,700	7-2	17-0	105	95	30	—	—	—	—	850	
Civilian Coupé ..	M	2-3	Civilian Aircraft Co.	Hornet 2 ..	75	19 10 35 6	5 0	167	16-0	4-8	5-5	13-2	10-6	917	122	16	490	1,545	9-25	20-6	102	83	40	550	12,500	3-8	315	650	
Cloud ..	M.F.B.	6-8	Saunders-Roe, Ltd.	2 Whirlwinds	600	49 10 64 0	12 0	650	37-0	20-0	23-0	49-0	38-0	5,100	940	80	1,760	7,880	12-1	13-1	125	110	50	720	13,000	4	490	7,600 3	
Cloud ..	A	6-8	Saunders-Roe, Ltd.	2 Whirlwinds	600	49 10 64 0	12 0	650	37-0	20-0	23-0	49-0	38-0	5,500	940	80	1,580	8,100	12-5	13-5	120	105	51	680	12,000	4	420	8,050 3	
Cutty Sark ..	M.F.B.	4	Saunders-Roe, Ltd.	2 Hermes	210	34 4 45 0	9 0	320	24-0	10-5	12-0	17-5	23-0	2,430	390	40	840	3,700	11-6	17-6	105	90	48	640	10,000	4	360	3,500 4	
Cutty Sark ..	A	4	Saunders-Roe, Ltd.	2 Hermes	210	34 4 45 0	9 0	320	24-0	10-5	12-0	17-5	23-0	2,600	390	40	670	3,700	11-6	17-6	100	85	48	600	9,000	4	340	3,750 4	
Desoutter Coupé ..	M	3	Desoutter Aircraft Co. Ltd.	Hermes ..	105	26 0 35 6	5 9	180	24-0	4-6	7-8	12-0	9-5	1,100	187	20	530	1,800	10-0	17-1	113	98	(d)	900	16,000	5	500	875	
Elf ..	B	2	Geo. Parnall & Co.	Hermes ..	105	22 10 31 3	—	195	—	—	—	—	—	900	—	—	—	1,500	7-69	14-3	116	103	40	800	16,000	—	400	—	
Fiat A.S.1 ..	M	2-3	Soc. Fiat ..	Fiat A.50 ..	90	20 7 34 0	5 9	187	13-8	2-2	6-5	13-9	13-2	873	187	29	404	1,493	7-99	16-6	99	90	44	—	17,400	5-7	625	—	
Fiat A.S.1 ..	S.M.	2-3	Soc. Fiat ..	Fiat A.50 ..	90	22 5 34 0	5 9	187	13-8	2-2	6-5	13-9	13-2	992	187	29	404	1,612	8-62	17-9	95	84	45	—	16,050	5-7	560	—	
Hobo ..	M	1	Hendy Aircraft Co.	Scorpion II ..	35	19 6 32 0	5 0	122	—	—	—	—	—	435	—	—	—	650	—	—	100	—	—	—	—	—	—	—	—
Junkers Junior ..	M	2	Junkerswerke	Genet ..	80	23 4 32 9	—	147-5	—	—	—	—	—	750	154	—	396	1,300	8-82	16-2	102	87	45	650	13,800	5	430	840 5	
Junkers F.13 ..	M	6	Junkerswerke	Junkers L.5 ..	280	32 3 58 3	—	505	—	—	—	—	—	3,365	800	—	1,225	5,720	11-3	20-4	130	110	50	—	15,250	8	850	4,500 6	
Klemm L26 IIIa ..	M	2	Klemm ..	Cirrus III ..	95	23 8 42 0	6 6	185	24-5	3-7	8-3	19-0	10-5	924	—	—	—	1,418	7-67	14-9	106	90	37	—	16,500	3-5	350	700	
Martlet ..	B	1	Southern Aircraft, Ltd	Hornet ..	75	20 1 25 0	4 0	180	27-0	2-1	6-0	16-7	7-84	724	106	10	190	1,030	5-72	13-7	111	95	40	1,100	—	3	285	550	
Martlet ..	B	1	Southern Aircraft, Ltd.	Genet II ..	80	20 1 25 0	4 0	180	27-0	2-1	6-0	16-7	7-84	707	106	10	207	1,030	5-72	12-9	111	95	40	1,100	—	3	285	575	
Moth G. ..	B	2	D.H. Aircraft Co., Ltd.	Gipsy I ..	100	23 11 30 0	4 4½	243	21-2	2-65	8-1	13-0	14-6	970	140	20	620	1,750	7-20	17-5	98-5	83	47	410	9,000	3½	290	700 7	
Moth G. ..	S.B.	2	D.H. Aircraft Co., Ltd.	Gipsy I ..	100	24 10 30 0	4 4½	243	21-2	2-65	8-1	13-0	14-6	1,110	140	20	480	1,750	7-20	17-5	96	81	46	400	7,500	3½	280	960 7	
Moth Three (e) ..	M	2-3	D.H. Aircraft Co., Ltd.	Gipsy III ..	120	25 0 36 9	6 6	222	27-0	2-7	7-3	13-9	12-8	1,150	163	15	572	1,900	8-55	15-8	125	105	48	660	13,000	4½	440	1,000 8	
Moth Three (e) ..	S.M.	2-3	D.H. Aircraft Co., Ltd.	Gipsy III ..	120	—	36 9	6 6	222	27-0	2-7	7-3	13-9	12-8	1,290	163	15	432	1,900	8-55	15-8	123	105	47	645	11,500	4-0	430	1,250 8
Moth Six (f) ..	M	4-6	D.H. Aircraft Co., Ltd.	Lynx VI ..	225	28 10 47 0	8 4	354	42-0	3-5	10-3	22-4	18-7	2,380	539	87	644	3,650	10-3	16-2	127	105	54	710	14,500	5-4	560	3,100 9	
Moth Six (f) ..	S.M.	4-6	D.H. Aircraft Co., Ltd.	Lynx VI ..	225	31 0 47 0	8 4	354	42-0	3-5	10-3	22-4	18-7	2,653	539	87	521	3,800	10-7	16-9	124	100	54	620	12,000	5-4	540	3,700 9	
Moth Six ..	M	4-6	D.H. Aircraft Co., Ltd.	Wright R.975 ..	300	28 8 47 0	8 4	354	42-0	3-5	10-3	22-4	18-7	2,380	539	87	794	3,800	10-7	12-7	131	109	55	790	15,000	5-1	560	3,100 9	
Moth Six ..	S.M.	4-6	D.H. Aircraft Co., Ltd.	Wright R.975 ..	300	31 0 47 0	8 4	354	42-0	3-5	10-3	22-4	18-7	2,653	539	87	521	3,800	10-7	12-7	128	105	54	760	13,500	5-1	540	3,700 9	
Muskel II ..	S.M.	2	Short Brothers	Cirrus III ..	95	25 6 37 3½	6 3	214	36-5	6-0	9-5	18-5	15-8	1,071	112	15	452	1,650	7-72	17-4	102	80	48	620	11,500	4-2	340	— 10	
Robin ..	M	1	A.B.C. Motors, Ltd.	Scorpion II ..	35	17 6 25 4	4 6	97	13-0	3-5	5-5	9-0	7-0	440	60	5	200	705	7-27	20-1	100	84	42	700	13,000	4	340	395	
Spartan ..	B	2	Simmonds Aircr. Co., Ltd.	Hermes ..	105	25 0 28 11	4 6	240	16-5	2-9	7-5	10-3	15-6	990	155	25	300	1,470(g)	6-13	14-0	105	90	40	—	—	—	—	700	
Spartan ..	B	3	Simmonds Aircr. Co., Ltd.	Hermes ..	105	25 6 28 11	4 6	240	16-5	2-9	7-5	10-3	15-6	1,025	155	25	475	1,680	7-0	16-0	100	85	44	—	—	—	—	735	
Surrey A.L.1 ..	B	2	Surrey Flying Services	Salmson ..	95	20 0 28 9	—	215	—	—	—	—	—	680	—	—	—	1,200	5-58	12-6	110	—	45	1,100	20,000	—	200	—	
Swift ..	M	1	Comper Aircraft Co.	Scorpion II ..	35	18 9 24 0	4 0	90	10-5	2-0	4-5	9-5	6-0	470	70	10	180	730	8-11	20-8	105	85	35	700	14,500	4	350	400 11	
Windhover ..	M.F.B.	4-5	Saunders-Roe, Ltd.	3 Hermes 12 ..	315	41 3 54 4	10 0	450	30-0	13-5	14-0	28-0	25-0	3,440	585	60	1,060	5,145	11-4	16-3	105	90	48	650	12,000	4	360	4,530	
Windhover ..	A	4-5	Saunders-Roe, Ltd.	3 Hermes 12 ..	315	41 3 54 4	10 0	450	30-0	13-5	14-0	28-0	25-0	3,640	585	60	860	5,145	11-4	16-3	100	85	48	600	11,000	4	340	4,780	

(a) Maximum permissible flying weight, 1,643 lb.

(b) Maximum permissible flying weight, 1,750 lb.

(c) Maximum permissible flying weight, 1,750 lb.

(d) Claimed to be unstallable.

(e) Weights and performance subject to variation  $\pm 5$  per cent.(f) Weights and performance subject to variation  $\pm 5$  per cent.

(g) Maximum permissible weight for aerobatics C. of A., 1,680 lb.

1 Price for England only.

2 Cirrus III, Gipsy or Genet, if desired.

3 Can be supplied with any suitable engines totalling about 600 h.p.

4 Any suitable engines of 200 h.p. total can be fitted if desired.

5 Price includes everything. No extras.

6 Price is inclusive. Junkers metal propeller.

7 Weights and performance  $\pm 2\frac{1}{2}$  per cent.

8 Two alternative tankages give ranges of 570 and 700 miles.

9 With smaller tanks and range reduced to 300 miles, pay load increased.

10 Also supplied with land or amphibian chassis.

11 A de Luxe model marketed at £450.

12 Can be supplied with any suitable engines totalling about 300 h.p.

A = Amphibian; B = Biplane; F.B. = Flying Boat; M = Monoplane; S = Float Seaplane.





# AUTOGIRO

**T**HE Autogiro stands quite alone in the aircraft market, as it is the most unorthodox.

The lift in this machine is obtained not from the usual stationary type of wing or wings, but from four rotating wings which, through the aerodynamical action of their rotation exert the necessary lift to fly the machine. They are not driven in any way except at the start and their rotation is a natural function of their aerodynamical characteristics, hence the name "auto-giro," and once they are started they continue to rotate until the machine comes to rest on landing. For starting this rotation the latest method which has been designed is to utilise the slipstream from the engine which is deflected on to the blades by means of the tailplane and elevators which are locked together and then set at the requisite angle so that the slipstream coming aft is caught and deflected upwards on to the blades.



Many engines have been fitted to these machines and for the private owner those advocated are the Armstrong-Siddeley "Genet" or the "Cirrus III."

The chief advantages of this peculiar design are its ability to fly very slowly and to land almost vertically. The initial rate of climb is not very good, being only 500 ft./min., but the advantage of being able to land in a small space is very great indeed. Anyone can easily learn to fly this type, and even those who have never flown it before find that they can, with the help of the wheel brakes, land with a run of only a few yards.

Don Cierva, the designer, is a Spaniard, and to build his machines in this country he has formed the Cierva Autogiro Co., with offices at Bush House, London, W.C.2, while the works are at Hamble.

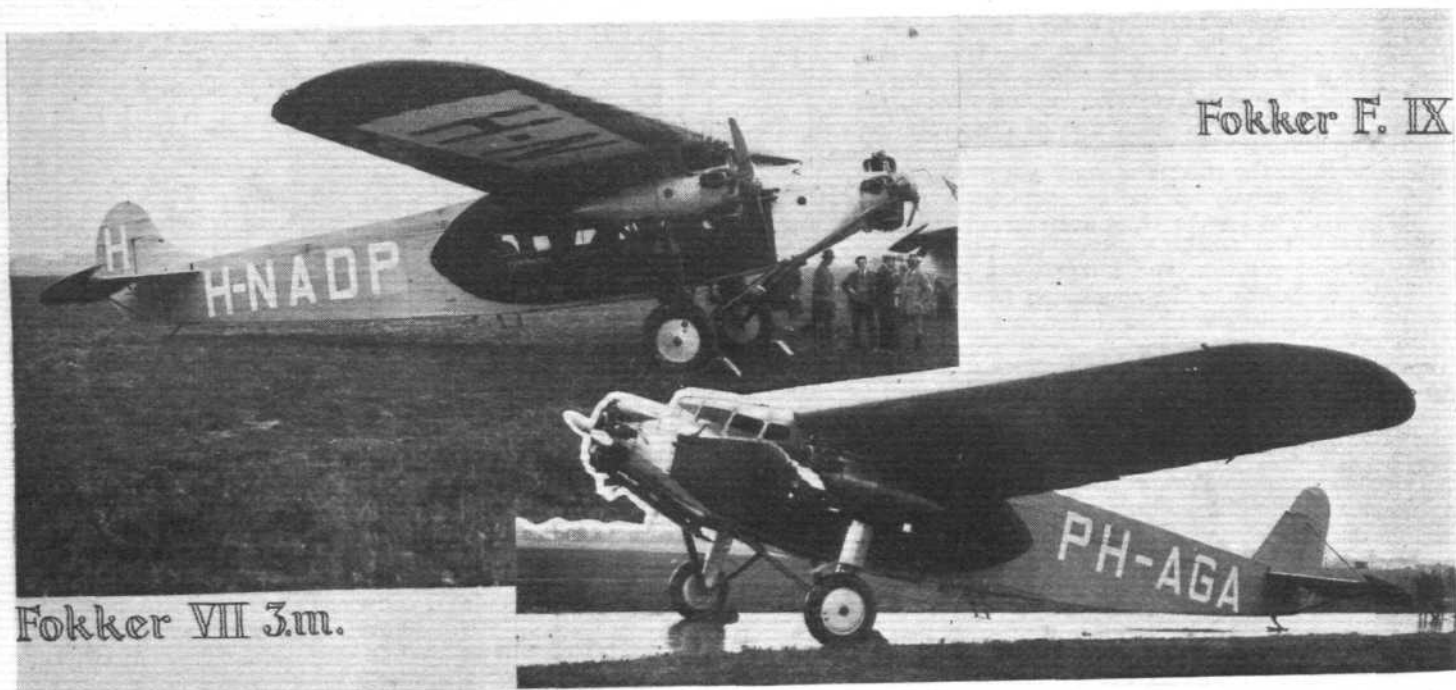
The actual fuselage is of normal construction and is fabric covered. The undercarriage is worthy of especial note as it has had to be designed to stand the stress of the almost vertical landings which the Autogiro is capable of. The track is very wide and the compression legs are oleo shock absorbers with a travel of some 12-in. Bendix wheel brakes are fitted which not only decrease the landing run still further but also allow very easy manœuvring.

The Autogiro can hardly be said to be an established private owner's machine, but its qualities make it one which should be very safe to fly.

One of these machines was, the year before last, flown round the continent on a demonstration flight of over 3,000 miles without any mishap, during which it visited most of the capitals of Europe, so that it cannot be said to be untried.



## FOR "BIG CLAUS" AND—



A choice of Machines for the Man of Means—



# —FOR “LITTLE CLAUS”



S.E.5a.



“Widgeon III”



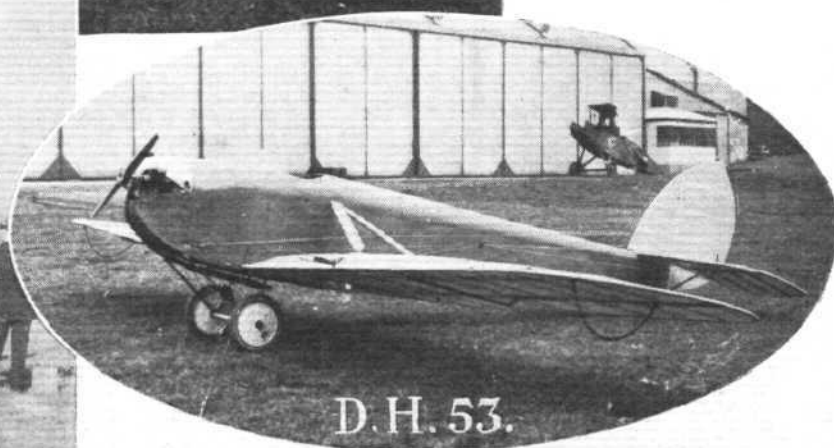
“Widgeon II”



“Cheetah”



“Woodpigeon”



D.H. 53.

# ENGINES FOR PRIVATE AIRCRAFT

In the following pages are given photographs and brief descriptions of a number of power plants suitable for Private Owners' machines.

## A.B.C.

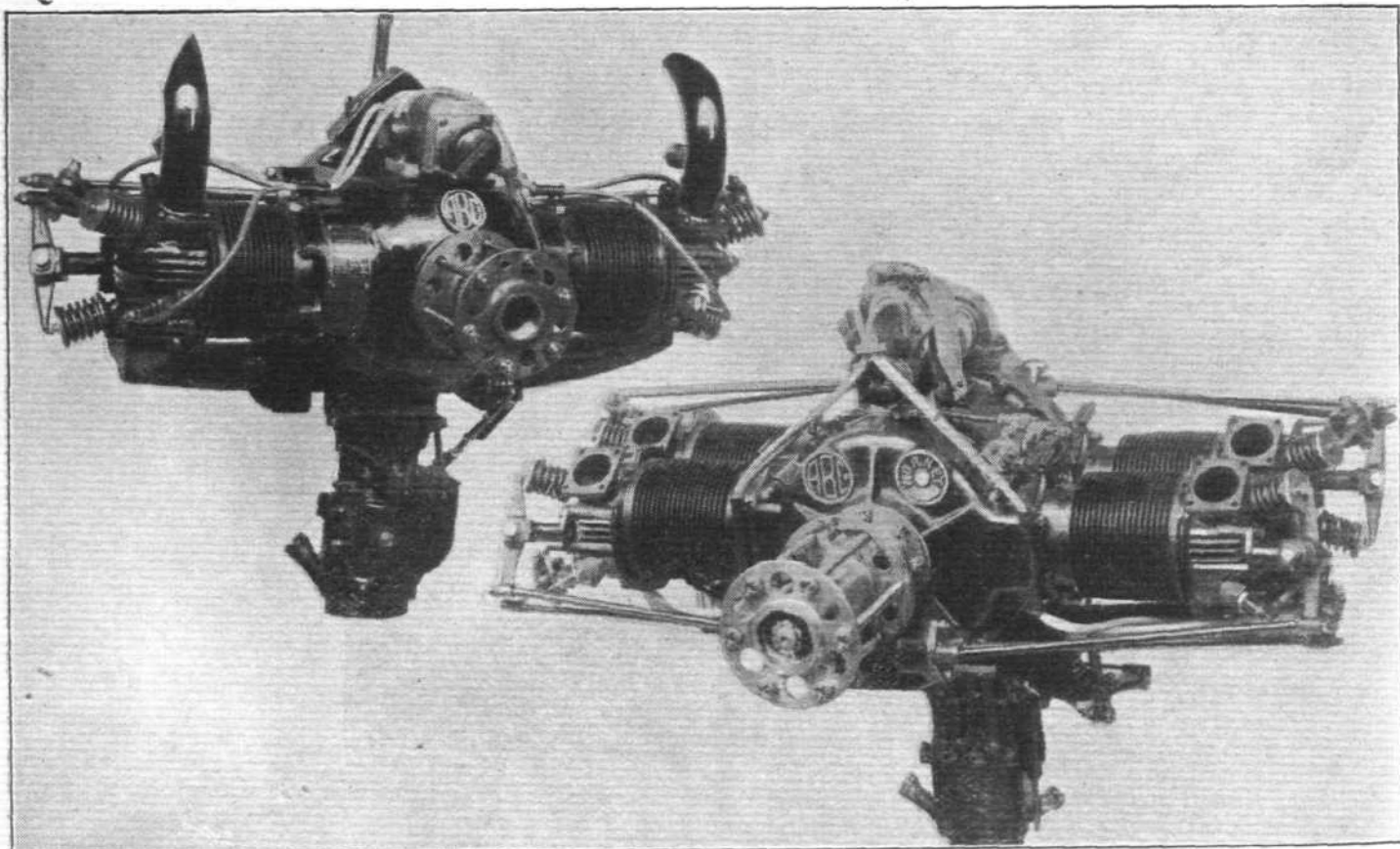
**D**ESIGNED and built by A.B.C. Motors, Ltd., of Walton-on-Thames, the two light 'plane engines produced by this firm are the 35 h.p. "Scorpion" and the 75 h.p. "Hornet." Both engines have horizontally-opposed cylinders, but whereas the "Scorpion" is a twin, the "Hornet" is a four-cylinder double-twin engine, being, in effect, a double "Scorpion." Both engines have aluminium crankcases and steel cylinders with cast-iron heads. There are two valves per cylinder, and two sparking plugs diametrically opposed. The two-throw crankshaft has its throws at 180°, and runs in roller bearings, with a ball bearing to take the thrust of the airscrew. The connecting rods are of high-tensile steel, those of the "Scorpion" having their big ends formed integrally with the rod, while those of the "Hornet"

have split big ends. In the latter engine there are two big ends on each throw, running side by side.

The pistons are of aluminium alloy, and have but a single compression ring with a special form of oil scraper ring placed immediately below it. The piston crowns are concave, forming with the hemispherical cylinder head a combustion chamber of approximately spherical shape.

Lubrication is on the dry sump principle with pressure and scavenge pumps.

Of the two A.B.C. engines the "Scorpion" is that which has been most extensively used, having been adopted with great success not only on light 'planes at home, but also very largely abroad. Among the machines fitted with this engine may be mentioned the Comper "Swift." The "Hornet" is of slightly more recent production, but it also is gaining in popularity. Fitted in the Southern "Martlet," it has given that machine a very good performance.



THE A.B.C. ENGINES: On the left, the two-cylinder "Scorpion," and on the right, the four-cylinder "Hornet."

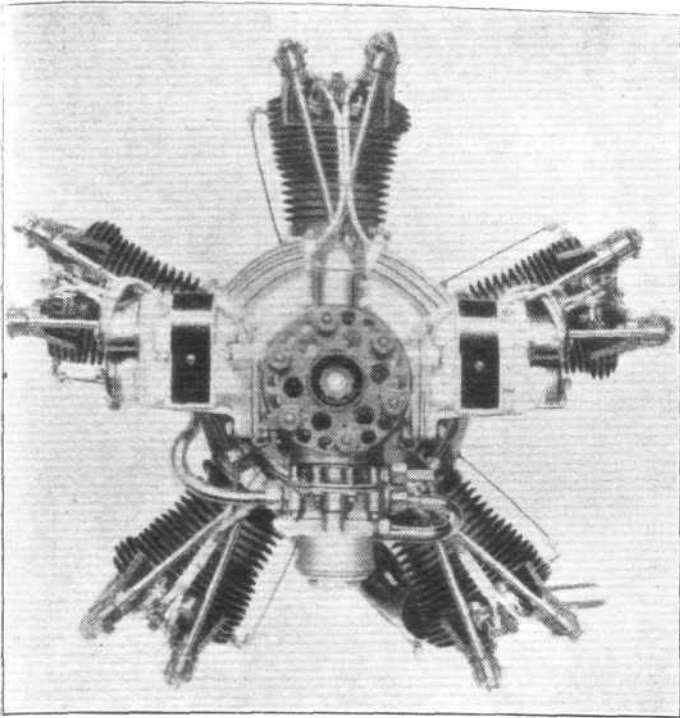
## ARMSTRONG-SIDDELEY

**Q**UITE a large range of engines suitable for privately-owned aircraft is produced by Armstrong-Siddeley Motors, Ltd., of Coventry. Owing to the fact that it is difficult to draw any very distinct lines marking the limits of such aircraft, it is difficult to decide how many of the A.S. engine types to include, but we have thought that if we take the first four, beginning at the lower end of the scale, we shall cover those most likely to be installed in aircraft for the private owner. These four are: the 80 h.p.

"Genet," the 100 h.p. "Genet Major," the 150 h.p. "Mongoose," and the 215 h.p. "Lynx." The aircraft designer whose choice is the radial air-cooled type of engine must be hard to please if he cannot select from this range an engine to suit his particular needs.

The "Genet" is a five-cylinder radial, so mounted that one cylinder is vertical at the top. The aluminium crankcase is of the one-piece type, i.e., it is not split laterally, and the cylinders are attached to it, as in all Armstrong-Siddeley engines, by a screwed and flanged collar which is screwed to





**The Armstrong Siddeley "Genet."**

the bottom end of the cylinder barrel. The cylinders are of composite construction, with barrels turned from steel forgings on to which the aluminium heads are screwed and shrunk, being locked in position by a mild steel ring which forms an additional cooling fin.

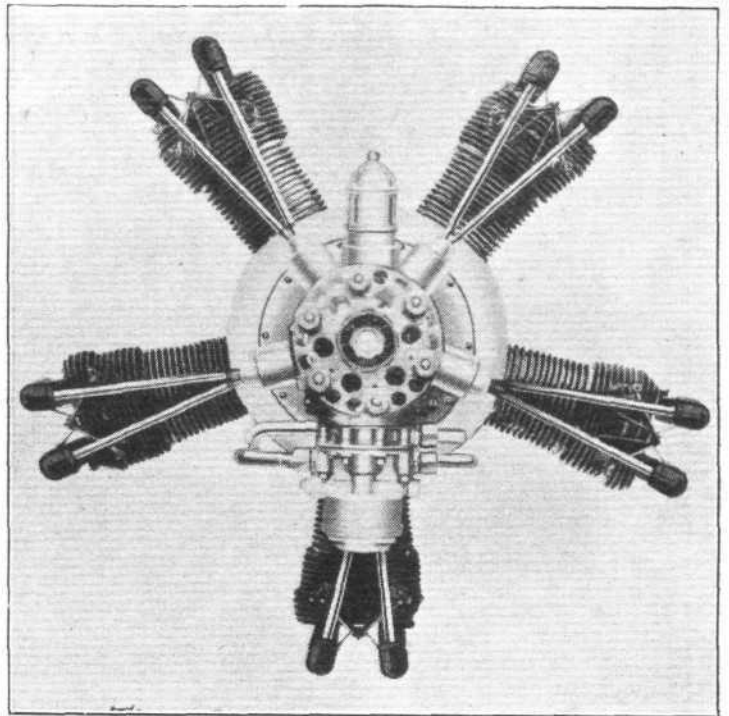
There are two valves per cylinder, inclined in the hemispherical combustion chamber, and operated by push rods and tappets from the internally-toothed cam ring unit which is housed in the front cover of the crankcase. The pistons are "Y" alloy forgings, with two compression rings and one scraper ring.

The crankshaft is of the single-throw type, the crankpin carrying the big end of the master rod, to which the articulated rods of the other four cylinders are hinged.

Lubrication is on the dry sump principle, the oil pump unit, with pressure and scavenge pumps, being mounted under the front cover of the crankcase.

The two magnetos which provide dual ignition are mounted on the front of the engine, one on each side, where they are readily accessible.

The "Genet Major" is generally of similar design to the "Genet," but it is so mounted that the vertical cylinder



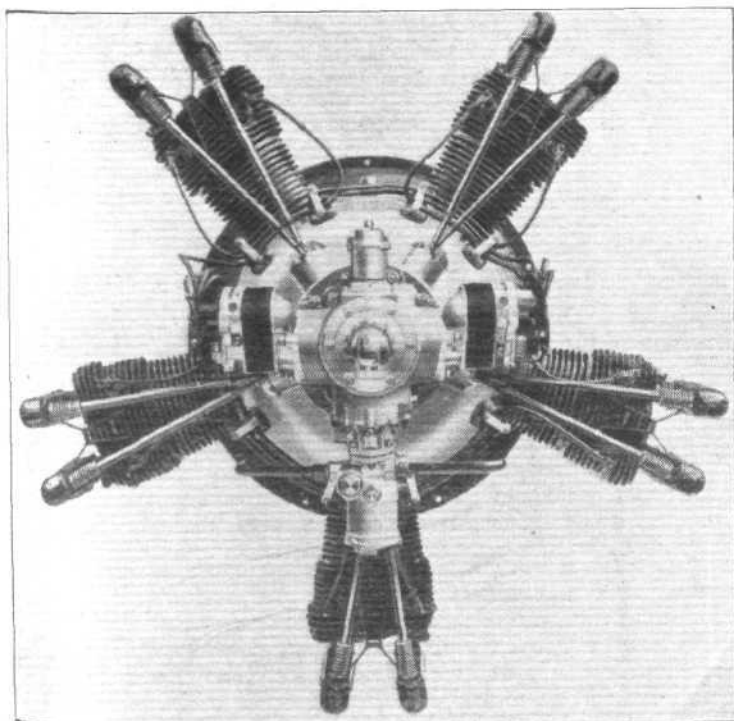
**The Armstrong Siddeley "Genet Major" is of quite recent production.]**

is at the bottom, thus leaving a gap between the two upper cylinders. The new type of streamline casings around the valve rockers add to the clean appearance of the engine. The magnetos are, in the "Genet Major," mounted on the back of the engine.

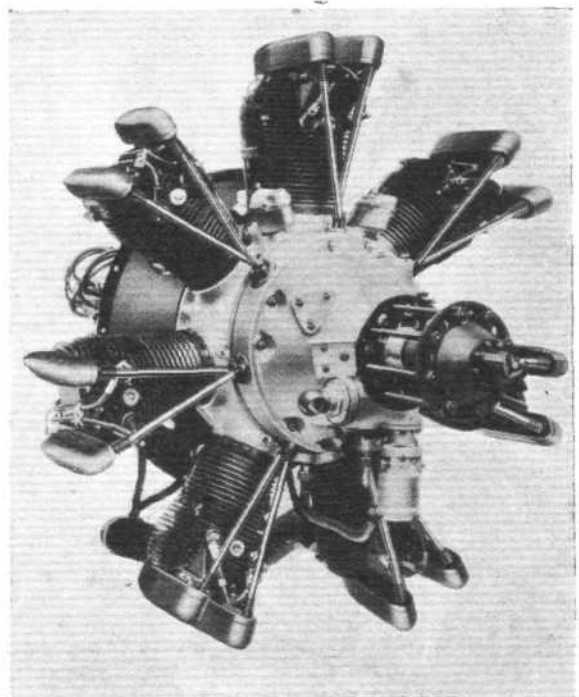
The "Mongoose" engine has been in production for a considerable time, and while sharing with the two engines previously mentioned the five-cylinder radial arrangement, it has larger cylinders. In point of fact, the cylinders of the "Mongoose" are identical with those of the "Lynx" and "Jaguar" engines, with which they are interchangeable.

The "Lynx" engine already has several years of successful working behind it, but has shared with other Armstrong-Siddeley engines the refining processes of up-to-date design and production. The "Lynx" has seven cylinders disposed around its crankcase, and in addition to the direct-drive type illustrated is also produced as a geared engine. To allow for the addition of the propeller reduction gear the magnetos are placed at the back of the engine.

The main data relating to the Armstrong-Siddeley engines will be found on page 400.

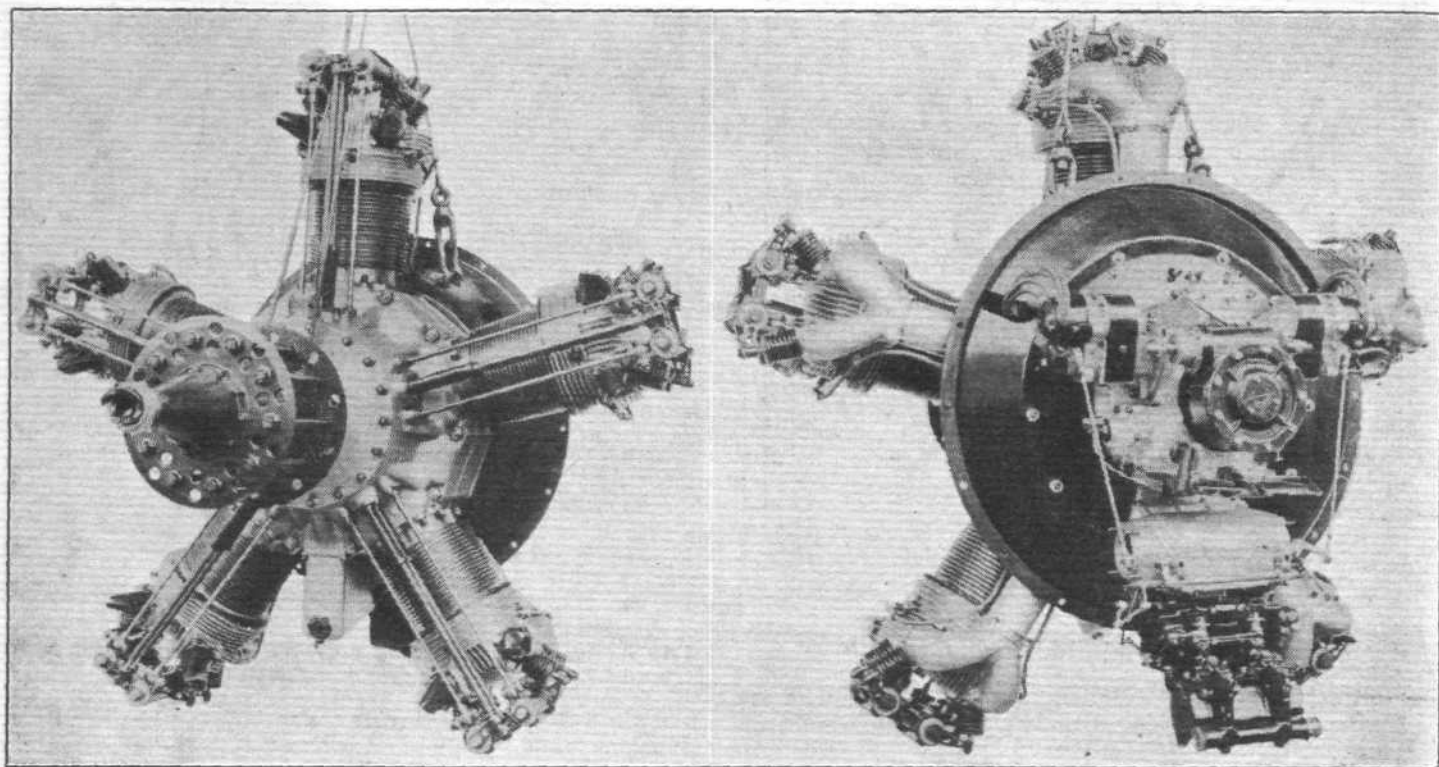


**The Armstrong Siddeley "Mongoose."**



**The Armstrong Siddeley "Lynx."**

## BRISTOL



TWO VIEWS OF THE BRISTOL "TITAN II": This engine has cylinders identical with those of the famous "Jupiter," but is a 5-cyl. radial.

**H**AD this Private Owners' Aircraft supplement to FLIGHT been published a couple of years ago or so, the engines of the Bristol Aeroplane Co., Ltd., of Filton, Bristol, would have included the little two-cylinder flat-twin "Cherub" of 34 h.p. and the three-cylinder radial "Lucifer" of 120 h.p. The former engine has now, however, been discontinued by the firm, while the "Lucifer," although still doing extremely good work in the Bristol school machines, is not now on the general market, and thus cannot be assumed to be of direct interest to the private owner of aircraft.

At the moment the Bristol company is represented, in this particular market, by the "Titan" engine, a five-cylinder radial which makes use of the identical cylinders used in the famous "Jupiter" series of engines, another type known as the "Neptune," and which made its first appearance at the Olympia Show last year, being a slightly more powerful version with seven instead of five cylinders.

The "Titan" shares with the new-type "Jupiter" F engine the new Bristol cylinder design, in which the closed-ended steel barrel has given place to an open-ended one, the Y-alloy cylinder head being now in direct contact with the charge. Apart from the better cooling thus obtained, the general shape of the combustion chamber has resulted in a

marked improvement in power output. One result of the change in cylinder-head design has been that the old valve arrangement has been modified. The new combustion head is of the penthouse form, with two valves in each slope, the rear valves being inlets and the forward exhaust valves. The new heads, it should be noted, are machined all over.

The fitting of inclined valves has resulted in the complete re-designing of the overhead-valve rocker gear. The rockers now oscillate about a fore-and-aft axis, and each of the two push rods actuates two rocker arms. The temperature compensating gear which was a familiar feature of older Bristol engines has had to be abandoned, but a neat and simple method of neutralising cylinder expansion has been introduced instead.

The "Titan," like the other Bristol engines, has its crankcase split in the plane of the cylinders, which are held down to the crankcase by studs. The crankshaft is of the two-piece type, which construction enables the master connecting rod to have an integral big-end. A floating bush is interposed between the crank-pin and the master rod big-end and reduces the wear considerably.

All auxiliaries are collected together on the back of the engine, leaving the front particularly clean for cowling purposes. As in all Bristol engines, the workmanship is superb.

## CIRRUS

**A**T the present moment two types of engine are manufactured by Cirrus Aero Engines, Ltd., of Regent House, Kingsway, W.C.2; the "Cirrus" and the "Hermes." Both are four-cylinder, in-line, air-cooled, but the "Cirrus III" develops normally 90 b.h.p. and the "Hermes" 105 b.h.p.

It is worth recalling that it was the "Cirrus" engine which did more than any other type to establish the light aeroplane class in Great Britain, the first "Cirrus" engines being fitted as the standard power plant of the first de Havilland "Moths." The "Cirrus" has now reached the Mark III stage, in which the normal power output is as given above. That it has not reached the limits of its development seems certain.

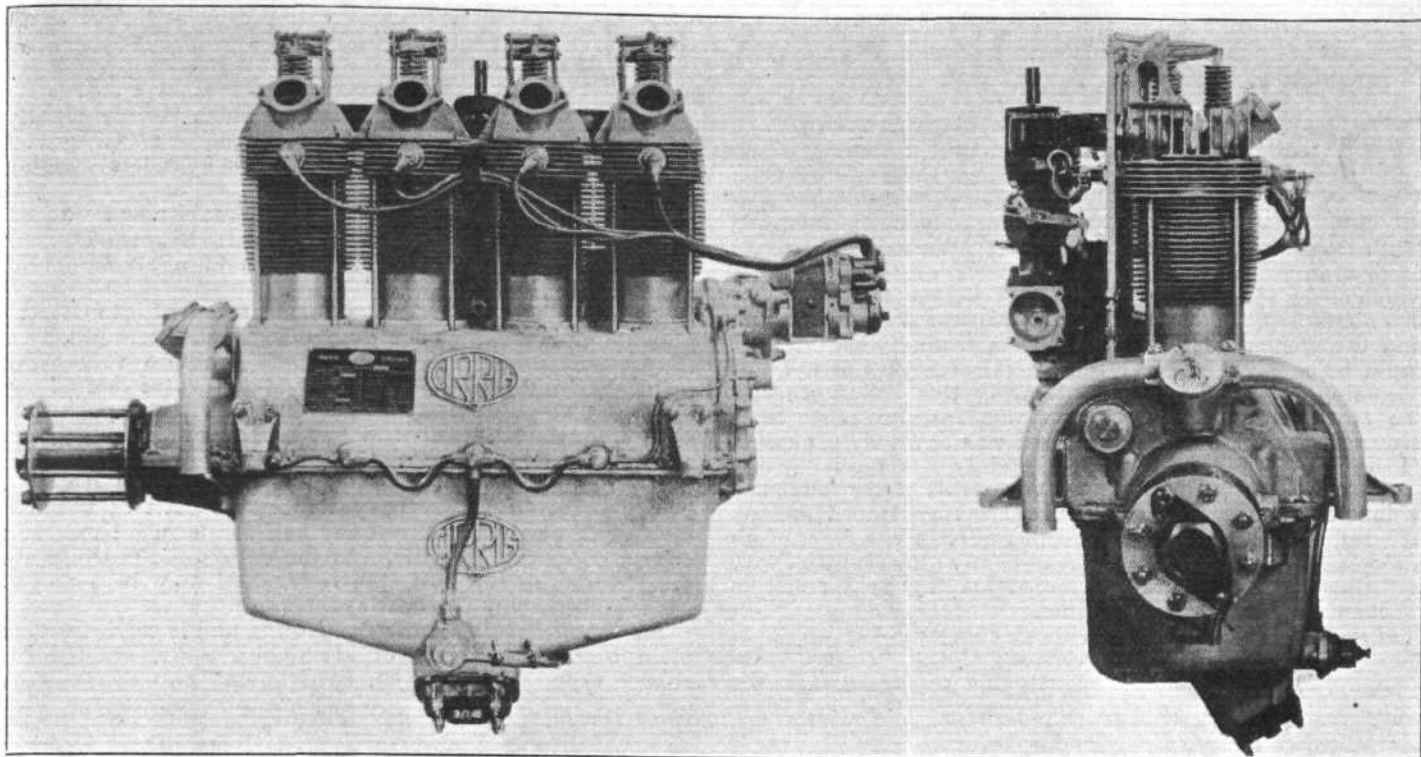
The cylinders of the "Cirrus III" are of composite construction, having cast-iron barrels which are spigoted into the

aluminium alloy heads. The cylinder assemblies are secured to the crankcase by four long steel studs. The inlet and exhaust domes are cast integral with the cylinder heads, and terminate in flanges for the attachment of their respective manifolds. There are two (vertical) valves per cylinder, operated by pushrods and rockers from a camshaft carried on the starboard side in the top half of the crankcase. Dual ignition is provided, the magnetos being mounted at the rear of the engine.

The crankcase is an aluminium alloy casting, and is made in two portions, the top half being stiffened by transverse webs which carry the crankshaft intermediate bearings. The bottom half forms an oil reservoir with a capacity of 12 pints. The oil pump is fitted at the lowest part.

The crankshaft is a one-piece forging, and is carried in five bearings. The Y alloy connecting rods are I section





THE "CIRRUS III" ENGINE : Side and front views.

forgings, the big ends being of the white-metal lined, split bush type. The cast aluminium pistons are fitted with three rings, and are secured to their connecting-rod little ends by hollow gudgeon pins of the fully floating type.

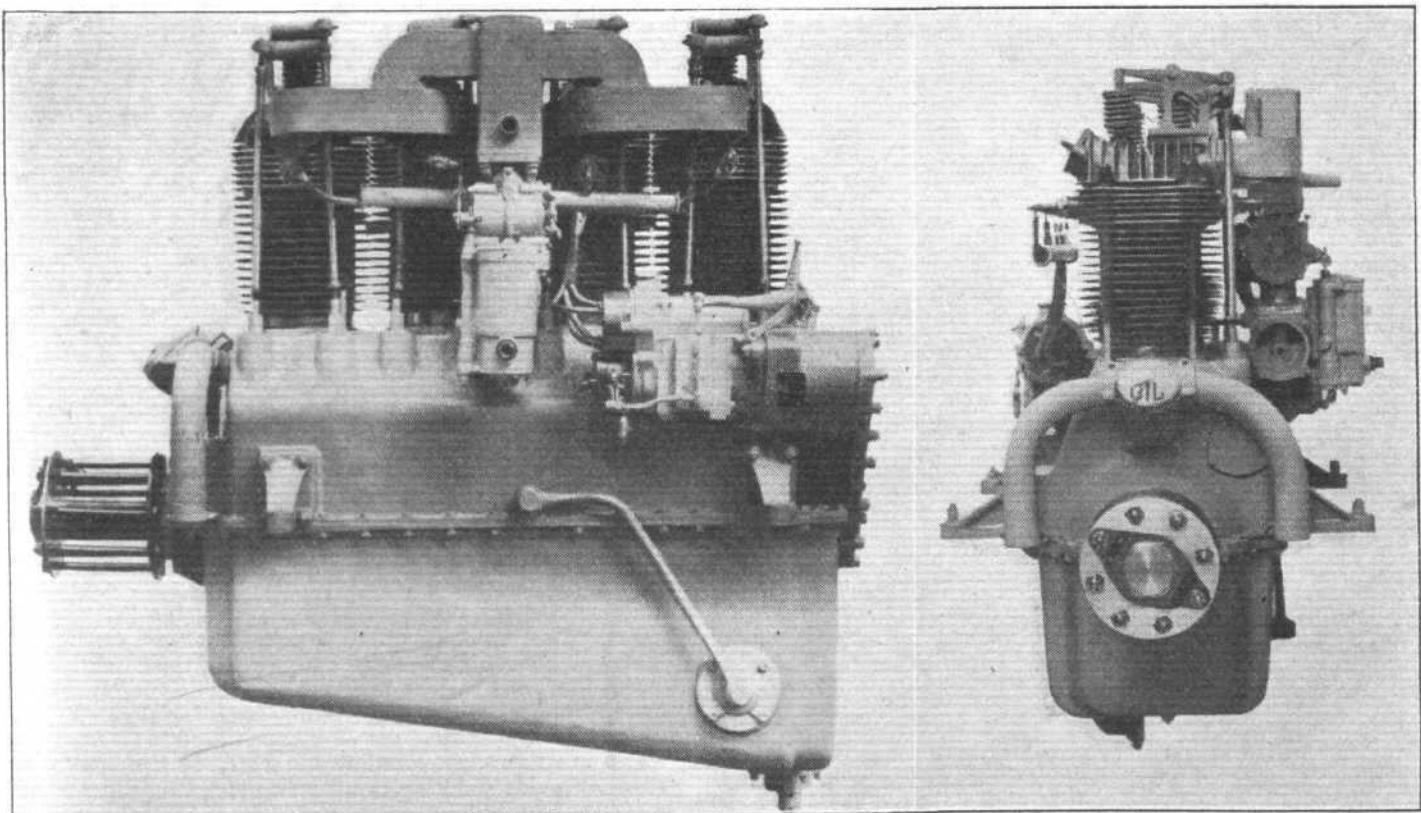
The "Hermes" engine is, like the "Cirrus," a four-cylinder, in-line air-cooled, but differs from the lower-powered engine in several respects, apart from the matter of increased cylinder dimensions.

The crankcase of the "Hermes" is deepest at the back, and is so designed that a very neat cowling can be used. The crankshaft is carried in five plain, white-metal-lined bearings, and the connecting rods are of steel. The camshaft, tappets and push rods are placed on the port side, and the inlet valves are on that side. The length, as compared with the

"Cirrus", has been shortened by placing the magnetos one on each side of the crankcase.

The induction manifold is quite different from that of the "Cirrus," and comprises a central, exhaust-jacketed portion which supplies two separate manifolds, each of which in turn feeds one pair of cylinders.

The lubrication system is similar to that of the "Cirrus," but the pump is placed at the rear end of the oil base, and the external oil pipes are replaced by internal conduits. An oil tray of special design is fitted in the lower half of the crankcase to trap the reserve oil, so that the engine is suitable for aerobatics. A gauge showing the quantity of oil in the base is fitted on the starboard side of the crankcase. The feet of the "Hermes" are identical in spacing with those of the "Cirrus."



THE CIRRUS "HERMES" ENGINE : Side and front views.

# DE HAVILLAND

**D**ESIGNED by Capt. G. de Havilland and Maj. F. B. Halford, and manufactured by the De Havilland Aircraft Co., Ltd., of Stag Lane Aerodrome, Edgware, Middlesex, the "Gipsy" engine has now become extensively used, not only in de Havilland Moth machines, but is also being adopted by several foreign aircraft manufacturers. One of the greatest feats which so far the "Gipsy" has to its credit is the running for 600 hours without any overhaul. This was done in a Moth, and the engine was sealed in such a manner that no part could be replaced without the official observers of the test becoming aware of the fact. During this endurance test the Moth in which the engine was installed covered a distance of some 51,000 miles, and was flown by a number of different pilots, the engine certainly not receiving any "nursing" during the period. As a result of the reliability which the engine exhibited, the De Havilland Company decided to make the most generous offer in the form of an undertaking to repair, free of charge, any aircraft fitted with a "Gipsy" which makes a forced landing as a result of mechanical failure of the engine.

More recently the De Havilland company has produced two slightly more powerful versions of the "Gipsy"—the "Gipsy II," which has a slightly longer stroke than the

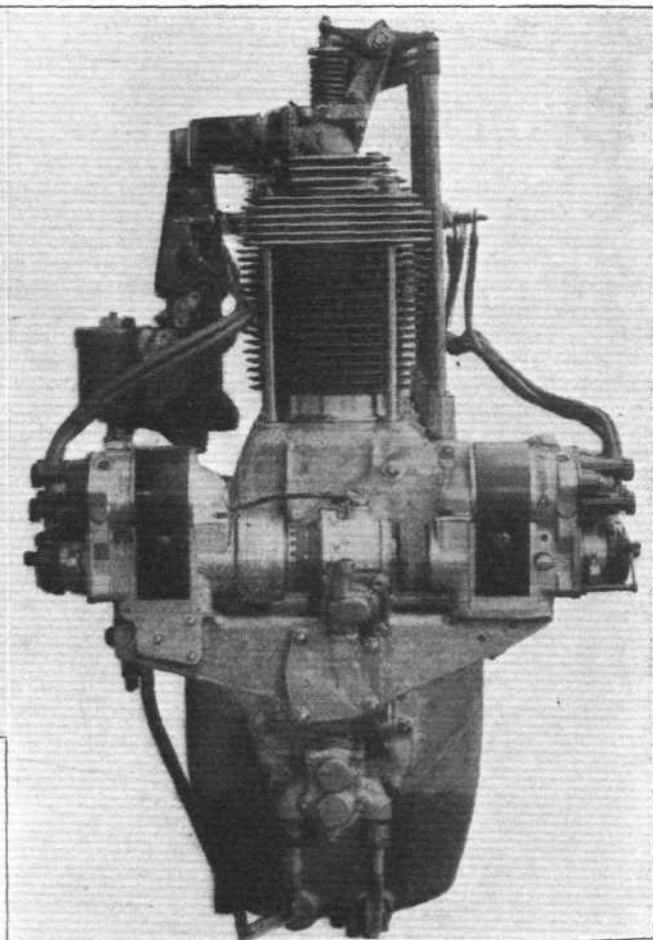
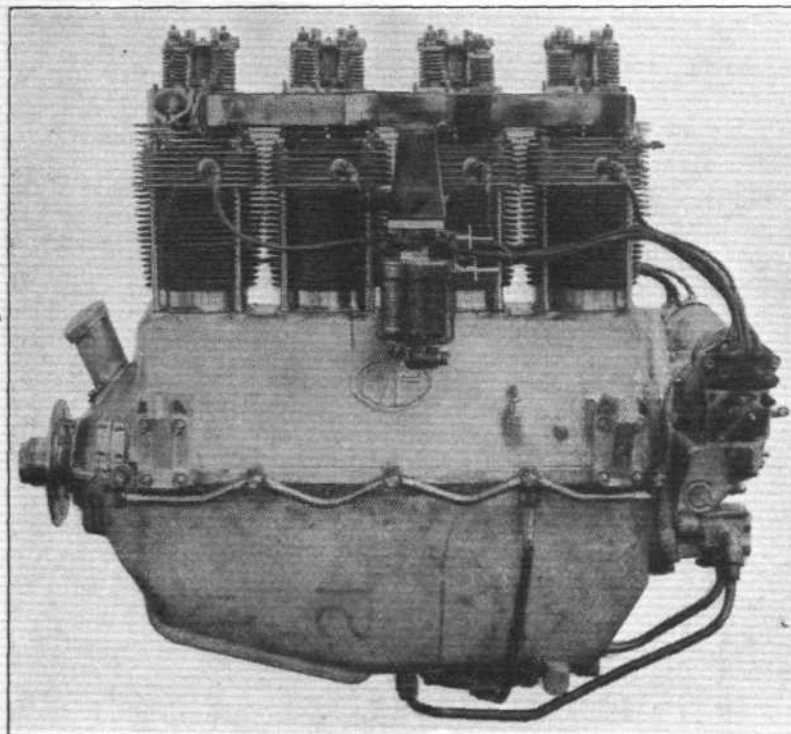
"Gipsy I," and the normal speed of which is very slightly greater, and the "Gipsy III," which is in effect a "Gipsy II" turned "upside down," i.e., having its cylinders hanging down from the crankcase.

The "Gipsy I," as the older engine should now be called is a four-cylinder in-line air-cooled with a normal power output of 90 b.h.p. at 1,900 r.p.m. and a maximum of 98 b.h.p. at 2,100 r.p.m.

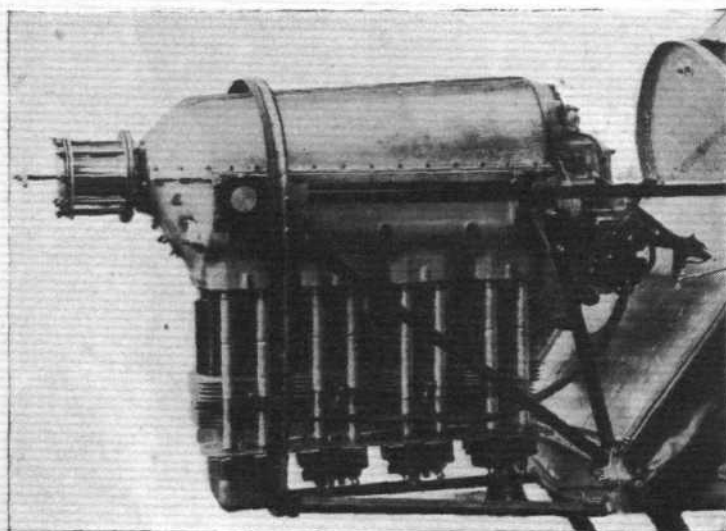
The cylinders have cast-iron barrels spigoted into detachable aluminium heads, the joint being made gas-tight by a copper and asbestos washer. There are two valves per cylinder, situated along the fore-and-aft centre line of the engine. The valves are operated by rockers and push rods from a camshaft mounted in five bearings in the starboard side of the crankcase.

The crankcase, of aluminium, is deep but of small width. The top half is transversely webbed at each of the five crankshaft bearings. The lower half forms an oil reservoir with a capacity of 2 galls. As the crankshaft bearings are secured to the top half, the lower half may be removed without disturbing the bearings.

The crankshaft is a one-piece forging and is carried in five plain bearings. Pistons of aluminium alloy, and of the slipper type, are employed, each having two compression



The De Havilland "Gipsy I." Side and rear views.



The "Gipsy III." This photo shows the mounting of the engine in the "Moth III."

rings and one scraper ring. The gudgeon-pins float in the little ends of the connecting rods as well as in the piston bosses. The connecting rods are Y-alloy forgings, of I-section. The big-ends are of the split type, with bronze bushes lined with white metal. Lubrication is on the wet-sump principle, and a large filling neck is provided on the front of the crankcase.

Two magnetos, mounted transversely at the back of the engine, provide dual ignition to two sparking plugs in each cylinder.

Reference has already been made to the two more recent versions of the "Gipsy," the series II and III. Apart from longer stroke, slightly higher speed and a slight increase in



compression ratio, the two newer models exhibit important alterations in other respects.

For example, the cylinders are made of steel instead of cast iron, and the overhead valve gear is totally enclosed in sheet-steel pressings which retain the oil. The push rods work in tubular conduits which form part of the lubrication system, so that not only is the adequate lubrication of the rocker mechanism, etc., ensured, but a very considerable reduction in mechanical noise has resulted, the open valve gear being a rather bad offender in the matter of giving rise to clattering noises. The "Gipsy III," which is the "inverted" engine, is quite remarkably silent, not only because of the enclosing of the valve gear, but also because,

with the cylinders hanging down from the crankcase, the heads of the cylinders are well below the level of the heads of the occupants of the machine, and the exhaust pipe runs below the bottom of the fuselage.

The "inverted" "Gipsy III" has, of course, had its lubrication system redesigned, the wet-sump principle being abandoned in favour of a dry-sump arrangement. In the Moth Three, for example, an oil tank is mounted in the side of the fuselage, in a position where, in addition to acting as a tank, it also acts as an oil cooler, by virtue of the fact that the slipstream passes over it.

Of the two latest "Gipsy" engines but little may be said here. It is hoped later to give detailed descriptions of them.

## POBJOY

**T**HE history of the "Pobjoy" engine is a somewhat unusual one. Designed by Mr. Pobjoy while he was an instructor at Cranwell, and the first engine produced under some considerable difficulties, as a private venture on a small scale was almost bound to be, the engine passed its Air Ministry type tests in 1928. Mr. George Parnall, of Bristol, undertook to finance the building of the first small batch of production engines, and the tools, jigs, etc., connected therewith. More recently, Mr. Pobjoy made some arrangement with the A.C. car company for the production of the engine, but that firm now having gone into liquidation, the immediate future of the "Pobjoy" engine is somewhat uncertain. It is to be hoped that it will be found possible to produce the engine, as the little "Pobjoy" has many features of interest, among others being its light weight for its power, and the fact that it is fitted with reduction gearing and thus will enable good propeller efficiencies to be obtained.

The "Pobjoy P.1" is a seven-cylinder radial air-cooled engine, with a double-helical reduction gear to the airscrew shaft, the ratio being 0.255:1. The engine is of exceptionally small size for its power, the overall diameter being but 25 in.

The crankcase is in four portions, the centre portion being split in the plane of the cylinders. The latter, with steel barrels screwed into Duralumin heads, have base flanges at the bottom and are secured to the crankcase by four bolts

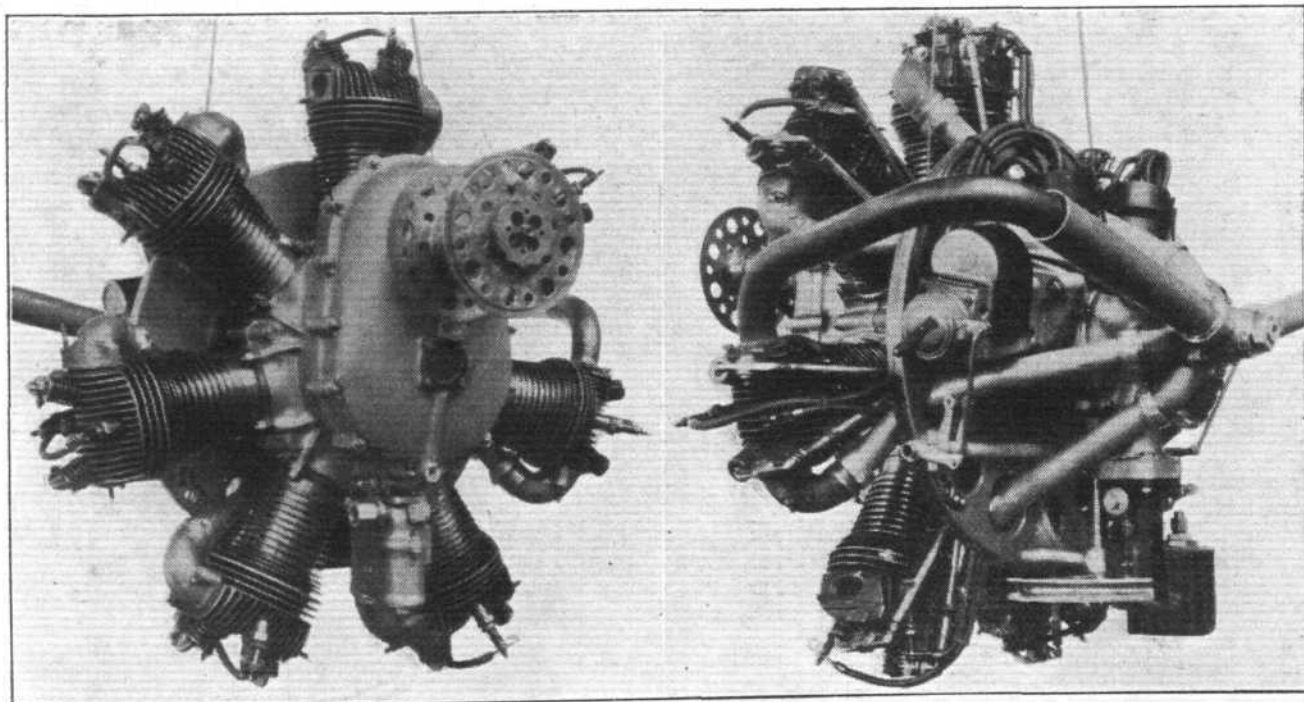
each. There are two valves per cylinder, operated by rockers and push rods from the cam ring unit at the back of the engine. The front portion of the crankcase houses the propeller reduction gearing, while in the rear part is the cam gear. The rear cover carries the magnetos and the induction manifold.

The crankshaft is of the single-throw, two-piece type, and is carried in two main roller bearings, a front plain bearing, and a rear ball bearing. The connecting rod assembly is of the type in which there is a master rod and six articulated rods. The big end of the master rod is made integral with the rod, and a floating phosphor-bronze bush forms the bearing for the big end. The crankshaft is fitted with a small fly-wheel, which also acts as a centrifugal separator for the oil.

A detachable unit comprising the oil sump and pumps, and their filters, is bolted to the bottom of the front portion of the crankcase. The filters can be removed without breaking the oil leads.

The ignition is somewhat unusual in that two single-point B.T.H. magnetos each supply one plug per cylinder through a vertical distributor. The armatures are geared to run at higher speeds than usual, thus ensuring a good spark for easy starting.

The engine is mounted on a vertical plate formed of a Staybrite steel pressing, provided with four bosses for the bolts attaching the engine plate to the four longerons of the fuselage.

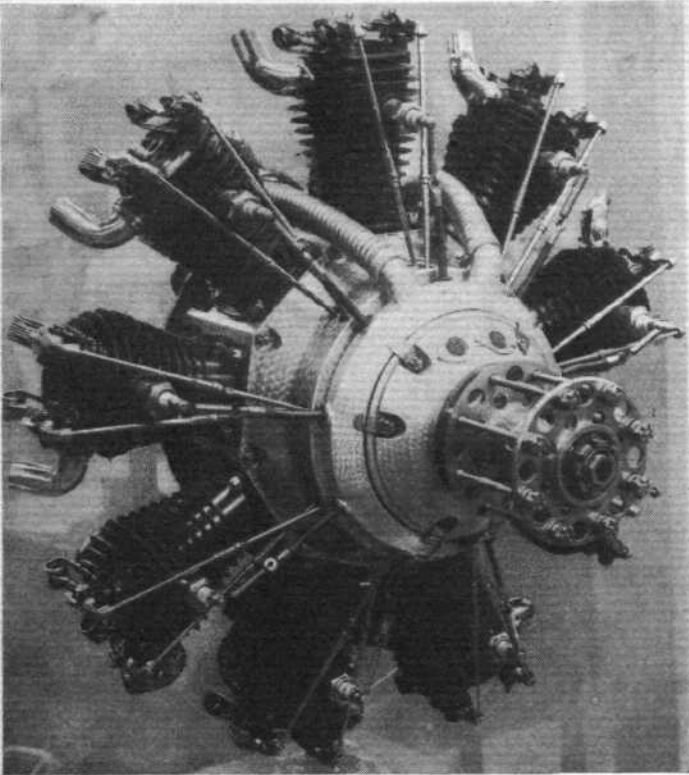


THE "POBJOY" AERO ENGINE: Three-quarter front and three-quarter rear views. Note the arrangement of the reduction gear.



SALMSON

WHEN FLIGHT first announced, in November of last year, that the French Salmson aero engines were to be manufactured under licence in Great Britain, by British Salmson Aero Engines, Ltd., of Church Wharf, Chiswick Mall, London,



The Salmson 40 h.p. A.D.9 Engine. This photograph shows the French engine. The British version will be slightly different.

W.4, it was stated that ultimately the British firm would build all such Salmson types as might be expected to be in demand, and that a start would be made with the little 40-h.p. type A.D.9. That statement still holds good, and although we have included in the table on this page data relating to other types, it will be the little nine-cylinder engine which will first appear on the British market. It is expected that the first British-built Salmson engines will be coming along shortly.

The A.D.9 is a nine-cylinder radial, and in view of the fact that the relatively low power is divided among so many cylinders, the running of the engine is particularly smooth and the torque very even. The crankcase, of aluminium alloy, is of the split type, with a spigoted joint in the plane of the cylinders. The front cover of the crankcase encloses the cam ring and its drives, and at the back are the drives for magnetos, oil-pump unit, etc.

The cylinders are of composite construction, with steel barrels of the closed-ended type, and poultice heads of aluminium, attached to the steel barrels in a manner which is the subject of a Salmson patent. There are two valves per cylinder, operated by rockers and push rods placed on the front of the engine.

The pistons are of aluminium alloy with internal ribbing. Each piston carries three rings, of which one is a scraper ring. The gudgeon-pin floats in the piston bosses.

A two-piece crankshaft is employed, carried in three roller bearings. The master connecting rod has an integral big-end, and to this are hinged the articulated rods, the wrist-pins being fixed in the master rod big-end. The rods themselves are of tubular section and are made of steel.

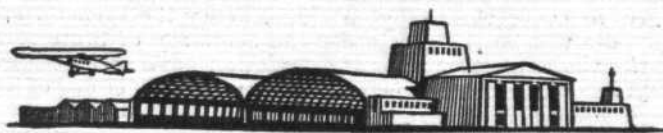
Of other Salmson aero engines likely later to be manufactured in this country, the A.C.5 is a five-cylinder radial of a normal power of 74 b.h.p. and of somewhat similar design to the A.D.9 but with greater bore and stroke, and consequently of greater capacity. The A.C.7 type is similar to the A.C.5, its cylinders being interchangeable, but having seven instead of five cylinders.

Finally, the A.C.9 is a nine-cylinder radial with identical cylinders, the A.C.5, A.C.7, and A.C.9 types providing between them a range of powers from 74 to 136 b.h.p. (normal).

TABLE OF ENGINE DATA

Makers.	Engine.	No. of Cylinders.	Bore (mm.)	Stroke (mm.)	Cubic capacity (c.c.)	Compression Ratio.	Normal b.h.p.	Normal r.p.m.	Maximum permissible b.h.p.	Maximum permissible r.p.m.	Fuel consumption at normal r.p.m. (pints/h.p./h.)	Oil consumption at normal r.p.m. (pints/h.)	Weight Complete (lb.)	Price (£).
A.B.C. Motors, Ltd.	Scorpion II	2	102	91.4	1,500	6	35	2,300	40	2,750	0.52	0.7	109	120
"	Hornet	4	102	122	3,990	5.6	75	1,875	82	2,175	0.53	1.5	225	260
Armstrong-Siddeley Motors, Ltd.	Genet	5	102	102	4,120	5.25	80	2,200	88	2,420	0.58	2.3	210	—
"	Genet Major	5	108	114	5,230	5.2	100	2,200	110	2,420	0.58	2.4	250	—
"	Mongoose	5	127	140	8,860	5.0	150	1,859	165	2,035	0.58	2.3	365	—
"	Lynx	7	127	140	12,400	5.0	215	1,900	230	2,090	0.58	5.8	548	—
Bristol Aeroplane Co. Ltd.	Titan	5	146	165	13,800	5.0	205	1,700	220	1,870	—	—	525	—
Cirrus Aero Eng., Ltd.	Cirrus III	4	110	130	4,939	5.1	90	1,900	95	2,100	0.60	1.6	285	—
"	Hermes	4	114	140	5,717	5.1	105	1,900	115	2,100	0.58	1.0	310	—
De Havilland Aircraft Co.	Gipsy I	4	114	128	5,226	5.0	90	1,900	98	2,100	0.51	0.5	285	—
"	Gipsy II	4	114	140	5,713	5.2	108	2,000	120	2,200	0.57	1.0	293	335
"	Gipsy III	4	114	140	5,713	5.2	108	2,000	120	2,200	0.57	1.0	298	335
"	Pobjoy P.I	7	72	87	2,460	5.7	60	3,000	68	3,300	—	—	115	—
Brit. Salmson Aero Eng.	Salmson A.D.9	9	70	86	2,979	5.6	50	2,000	55	2,200	0.54	1.3	154	—
"	Salmson A.C.5	5	100	130	5,105	5.0	74	1,800	76	1,900	0.54	1.5	242	—
"	Salmson A.C.7	7	100	130	7,150	5.0	106	1,800	112	1,900	—	—	286	—
"	Salmson A.C.9	9	100	130	9,189	5.4	136	1,800	145	1,950	—	—	357	—





# AIR TRANSPORT

## A NEW AERODROME BEACON

NIGHT flying, although at present only carried out on a comparatively small scale in this country, is becoming an important item in the commercial air services on the Continent and in America, where there now are several regular night services in operation. The time should not be far distant when night services—whether by aeroplanes or airships—will be the rule rather than the exception; the continual advance and development in wireless direction finding equipment, etc., and airport lighting, render night flying a much more practical proposition than was the case a year or so back.

The lighting equipment of airports and landing grounds is an important factor in this night flying, and already many successful devices in this connection have specially been produced for aerial navigation. Last week a demonstration was given at Croydon Airport with a new type of Aerodrome Beacon, which has just been developed by Philips Lamps, Ltd., of Charing Cross Road, London, W.C.2.

This Beacon, which we are able to illustrate in actual operation at Croydon, is claimed to be a considerable improvement on existing types, and is already in use, with successful results, in Germany. For the present we can only give brief particulars of this Beacon, but hope to give fuller details later on.

The Beacon shown has two 4-ft. Neon-type tubes, so arranged that should one go out of action for any reason the second tube is immediately brought into action automatically.

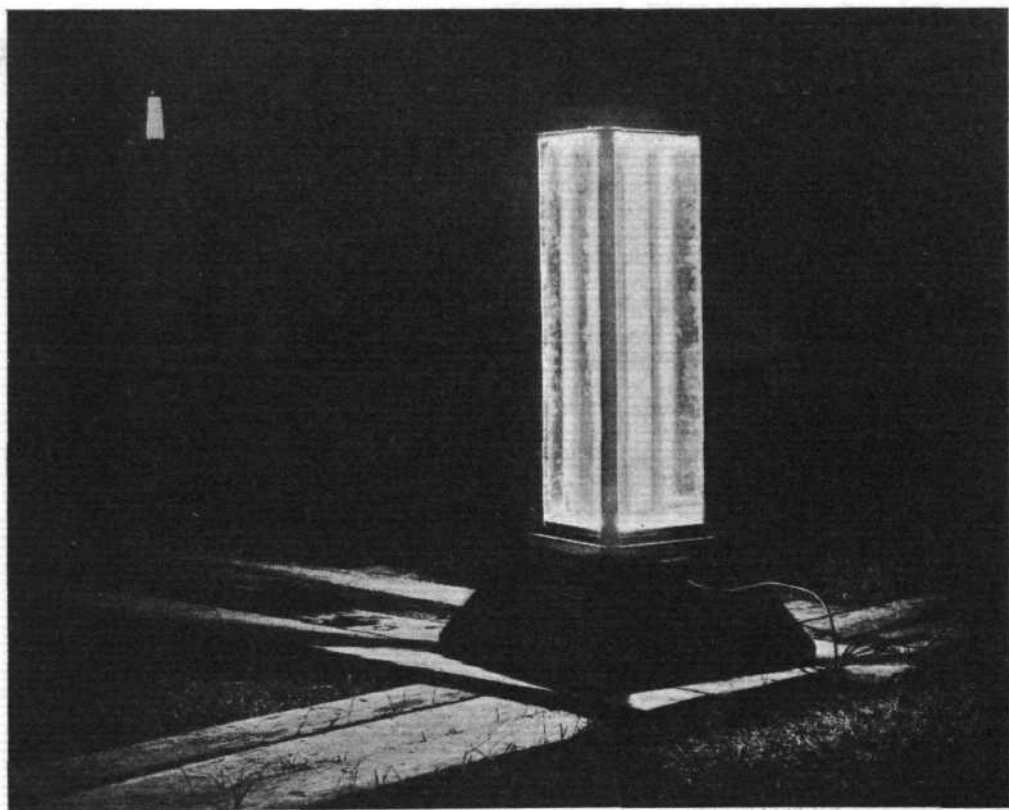
Its main advantage is in the matter of the power required to operate it—it runs on 220 to 230 volts (three-phase alternating) at 6 amps. (approximately) per tube, while normal types require much higher voltages.

Again, one 4-ft. Philips tube gives approximately 40 per cent more light than one 16-ft. tube of existing types, and the illumination provided is penetrating but without glare.

Other forms of aerodrome lights—horizontal boundary marks, etc.—are also produced by this firm.

**A NEW AERODROME BEACON:** Our illustration shows a photograph, taken at Croydon Airport last week, of a new aerial Beacon produced by Philips Lamps, Ltd. The main illuminating source is a 4-ft. tube (Neon type), but there is also a second "stand-by" tube, which automatically comes into action should the other tube fail. The beacon in the background, on the left, is an ordinary type, comprising twenty 16-ft. tubes. (FLIGHT

*Photo.*)



## PRINCE GEORGE TO OPEN BRISTOL AIRPORT

### Air Pageant and R.A.F. Display

THE first particulars are now to hand of the official opening Pageant of the new Bristol Air Port, to take place on Saturday, May 31. A large-scale Pageant with Air Force support is being organised, the actual show being intensified into a period of two and a-half hours, starting at 3.0 p.m. with the arrival of H.R.H. Prince George and the performance of the opening ceremony, and finishing at 5.30 p.m. The remainder of the time will be taken up by heats of races, joy-riding, etc. All competitors are asked to arrive at Bristol by midday, Friday, May 30.

There is a rallye open only to competitors starting from the Continent, the inter-Club race for the S.B.A.C. Challenge Cup and a "Bristol Aerial Derby," which is an open handicap

race. £325 cash in all is to be distributed as prize money, and should ensure good entries.

There is to be an "Exhibition Parade and Fly Over" of civil aircraft, each type participating being fully written up in the programme, including particulars as to its commercial purpose.

The programme will be a handbook divided into three sections, the first giving information about Bristol and its air port, the second events on the opening day, the third particulars of the Bristol and Wessex Aeroplane Club, and will be widely distributed after May 31.

All British visiting pilots will be the guests of the Bristol Corporation at the air port on the opening day, and special

inclusive terms are being arranged to cover their stay in Bristol, while all foreign visiting pilots will be the absolute guests of the Corporation during the whole of their time at Bristol from their arrival on Friday, May 30, until they leave on Sunday, June 1. A special medallion is being struck to commemorate the occasion, and will be presented to all visiting pilots.

The pageant coincides with the opening of the British-French Week in Bristol, and is to be the first official event, so that the Mayor and dignitaries of Rouen, as well as those of Bristol, will be present. Also it is hoped that his

Excellency the French Ambassador will be there, while both the Secretary of State for Air and the Director of Civil Aviation have accepted invitations to be present, and altogether it should be one of the most important events in British aviation this year.

Bristol is to be congratulated, not only on her airport, but on her initiative in advertising the fact to the world in organising such an opening Pageant.

The management of the airport and the entire organisation of the Pageant on May 31 is in the hands of the Bristol and Wessex Aeroplane Club.

## MELBOURNE—TASMANIA

THE Cutty Sark amphibian with two Hermes engines which has been ordered by Capt. G. C. Matthews, of Matthews Aviation Proprietary, Ltd., Melbourne, should have arrived in Australia by now. Messrs. Saunders-Roe have sent out some experts to erect the machine, and it should shortly be ready to start the service to Tasmania which has for years past been the object of Capt. Matthews' ambitions.

Capt. Matthews, it will be remembered, was a competitor for the £10,000 prize offered by the Commonwealth Government for the first flight from England to Australia. He flew a Wallaby and crashed *en route*, and ultimately the prize was won by Sir Ross and Sir Keith Smith. The Melbourne-Tasmania service was one of those mentioned by Mr. Bruce when the late Commonwealth Government made its plans

for extending Australia's airways, but we believe that Capt. Matthews will not be in receipt of any subsidy.

The service will be weekly and five aerodromes (four land and one sea) will be used. Working in conjunction with the east-west mail train service (if the postal authorities approve the schedule), the Cutty Sark will leave Essendon aerodrome, Melbourne, every Thursday, and will reach Hobart the same day, the distance being only some 300 miles. Intermediate stops for refuelling will be made at Wilson's Promontory, at Bridport in Tasmania, and in the harbour at Launceston. On the return trip the Cutty Sark will leave Hobart on Saturday mornings so as to catch the homeward mail train for Perth. The through fare is to be £13 13s.; Melbourne-Launceston, £10 10s.; and Launceston-Hobart, £3 3s.

### Imperial Airways, Ltd.

DURING the Easter week-end Imperial Airways will operate their full schedule services on Friday, Saturday and Sunday, April 18, 19 and 20. On Easter Monday the London-Paris and Paris-London services will operate to schedule, being supplemented as required, but the London-Brussels-Cologne-Brussels-London service will be suspended, as will be also the Paris-Basel-Zurich-Basel-Paris service. The directors of Imperial Airways have decided to call up the balance of uncalled capital, amounting to 5s. per £1 share. The present paid-up ordinary capital amounts to £474,170, and the final call will provide a further £124,998. The total issued capital is £624,168.

### Austrian Air Transport Statistics

THE following statistics regarding air traffic during 1929 operated by the Austrian Transport Co., are now available:—Distance flown, 678,498 km.; passengers carried, 6,400; freight carried, 42.8 m. tons; luggage carried, 69.2 m. tons; mail carried, 6.4 m. tons; ton-km., 182,150; passenger-km., 1,845,417; maximum daily mileage (summer), 5,166 km.; route mileage, 3,738 km.; regularity, 91 per cent.; load factor, 56 per cent.; safety, 100 per cent.

The flying covered nine routes, including their difficult Alpine routes, and it is thus all the greater achievement that these efficient services have been carried out with such a high degree of regularity and for the last six years without any death or injury to passengers. The fleet consists entirely of Junkers all-metal monoplanes of the F 13, G 24 and G 31 types.

### Brussels-London Night Service

A NIGHT air service between Brussels and London will be inaugurated at midnight, April 14-15.

### "Do X's" Atlantic Flight

PLANS are in progress for an Atlantic flight by the Dornier "Do X" flying boat. It is expected that it will leave Lake Constance late in June or early in July, with a crew of 12 and 50 passengers. A stop will be made at the Azores for refuelling.

### Air News from Italy

DURING 1929 Italian air lines (of which there are 18) covered a total of 6,704,864 km. (4,166,402 miles), and carried 54,675 passengers and 100,045 kg. (220,600 lb.). Many improvements, both as regards air services as well as airports, are being introduced for the 1930 season. Better facilities for reaching the Littorio airport of Rome are being provided, while new buildings and hangars are being erected at the Ostia airport; the buildings at San Niccolo al Lido (Venice) are also being improved. A new Athens-Rodi air service is to be inaugurated in conjunction with the Brindisi-Constantinople service, Savoia "S.55" flying boats being

employed. The Isotta Fraschini "Asso 500" engines have been adopted by the Transadriatica Co. for their Junkers 'planes, and two new "Marina" machines, fitted with "Piaggio" geared engines, have been put into service by the S.A.N.A.

C. de R.

### Air Ministry Report on Municipal Aerodromes for the month ending February 28, 1930:—

#### Towns which have licensed aerodromes (5)

Blackpool.	Nottingham.
Bristol.	Manchester.
Hull.	

#### Towns which have purchased sites (6)

Carlisle.	Plymouth.
Ipswich.	Sheffield.
Liverpool.	Stoke-on-Trent.

#### Towns which are negotiating for purchase of sites (10)

Bradford.	Portsmouth.
Burton.	Southampton.
Cardiff.	Southend.
Hereford.	Worcester.
Leeds.	Middlesbrough.

#### Towns which have reserved sites in their Town Planning Scheme (5)

Basingstoke.	York.
Morecambe.	Littlehampton.
Skegness.	

#### Towns which have had sites inspected (41)

Abergavenny.	Kidderminster.
Aberdeen.	Leicester.
Bognor.	Leek.
Bournemouth.	Lytham-St.-Annes.
Birmingham.	Maidstone.
Brighton.	Newton Abbot.
Belast.	Northampton.
Bedford.	Norwich.
Chester.	Newport.
Crewe.	Poole.
Cheltenham.	Rotherham.
Chorley.	Scarborough.
Derby.	Southport.
Gloucester.	Swansea.
Gateshead.	West Bromwich.
Glasgow.	Wolverhampton.
Greenock.	Worthing.
Hastings.	Wellingborough.
Huddersfield.	Walsall.
Huyton.	Weymouth.
Inverness.	

#### Towns which are awaiting inspection of sites (8)

Blythe.	Wombwell.
Doncaster.	Rochester.
Gravesend.	Grantham.
Falkirk.	Winchester.

#### Towns other than above which have displayed interest in aerodromes (29).

Alloa.	Jarrow.
Bolton.	Loughborough.
Burby Port.	Newcastle.
Coventry.	Peterborough.
Darlington.	Sunderland.
Dover.	South Shields.
Dunfermline.	Salisbury.
Durham.	Shrewsbury.
Edinburgh.	Stratford.
Eastbourne.	Walton-on-Naze.
Exeter.	Warrington.
Gillingham.	Winsford.
Haywards Heath.	Yeovil.
Hebburn.	Wallasey.
Haverfordwest.	



# THE ROYAL AERO CLUB OF THE UNITED KINGDOM

## OFFICIAL NOTICES TO MEMBERS

THE Annual General Meeting of the Royal Aero Club was held at 3, Clifford Street, London, W.1, on March 26, at 8.30 p.m., immediately following the House Dinner. The Right Hon. Sir Philip Sassoon, Bart., P.C., G.B.E., C.M.G., M.P., the Chairman of the Club, presided.

**Committee Election.**—The following Members were elected to the nine vacancies on the Committee: Air Vice-Marshal Sir W. S. Brancker, K.C.B., A.F.C.; Capt. H. S. Broad; Maj. C. J. W. Darwin, D.S.O.; Lieut.-Col. M. O'Gorman, C.B.; Col. F. Lindsay Lloyd, C.M.G., C.B.E.; John Lord; Lieut.-Col. J. T. C. Moore-Brabazon, M.C.; Maj. H. A. Petre, D.S.O., M.C.; Air-Commodore C. R. Samson, C.M.G., D.S.O.

**Election of President and Vice-Presidents.**—The following were elected President and Vice-presidents: President, The Duke of Atholl; Vice-presidents, The Duke of Sutherland, Lord Wakefield of Hythe.

**Membership.**—The membership of the club has been maintained and the organisation of flying interests under the association with us of the light aeroplane clubs, has greatly extended and confirmed the influence of the club.

There are still, however, a large number of persons interested in aviation and desirable as club members whom we should each, among his own friends and acquaintances, endeavour to bring into the fold. Newcomers to us have much to gain, nothing to lose, little to pay, and the assurance that they are assisting a movement which is very vital to England and the Empire.

**Finance.**—The accounts for the year have been examined by your committee and passed. They are available for the inspection by any member who may wish to see them. He should apply to the Secretary.

The year's working has shown that the club is no longer living beyond its income, but, as it should, a trifle within it, viz., £350 to the good. This is a satisfactory turn of the tide after the previous year or so, which showed an excess the other way.

**New Premises.**—The lease of these premises expires in September, 1931, and the question of the future accommodation of the club has been a matter of serious consideration by the committee for several months, but the difficulties are considerable and nothing definite has yet been decided upon. Our present premises were secured at a favourable rental and, in view of the high cost of building, the present income of the club does not allow us to launch out into the kind of premises which the increasing interest taken in aviation by the great public is likely to warrant. Your committee feels that the club must make a very special effort to be in a position to meet the demand which is foreseen on every hand.

With this object, it is now investigating the "ways and means" for providing a club house more in keeping with the position of the Club, and, as soon as they have something tangible to report, the Members will be called together.

**Club's Activities.**—The activities of the club have centred on the sporting and touring side of aviation. We have kept touch with the movement in all its developments, whether in utilizing the most up-to-date means of recording phenomenal speeds or in redrafting the code which controls our sport, or in activating the somewhat slow-moving customs authorities of various nations to adapt themselves to the needs of flying.

The success in the Schneider Trophy Contest is a cause of pride to us. The gaining of the world's speed record, i.e., 357 m.p.h., for Great Britain, is also a fine item in the year's progress.

It is not necessary to enlarge on the various contests and competitions held during the year as they were fully dealt with at the time they took place.

On the question of air touring, the club has formed, as many members know since they have profited by it, a special department to deal with the demand for information and

facilities of members and associated members. It supplies all the particulars necessary or likely to be of use in any contemplated flight or tour. Information is available as to air routes, the rules for flying, particulars of aerodromes, landing grounds, prohibited areas, etc., and also as to official requirements and formalities to be conformed to on entering or leaving a foreign country.

Large scale maps showing all known aerodromes and landing grounds are available at the club, and special maps for air touring can be prepared and supplied. Flying members have sent in information as to their difficulties and suggestions for what might be done to remove them, and they are invited always to do this.

During the past year there has been considerable activity in air touring abroad from this country, and the club has issued a total of 252 carnets. This shows a very large increase over the previous year, when 157 carnets were taken out. The number of British flyers using carnets exceeds that of all the other countries put together.

**Aviators' Certificates.**—There has also been a substantial increase in the number of flyers who have taken their aviator's certificates in the past year. This is mainly due to the excellent work of the light aeroplane clubs throughout the country, who are closely associated with us, and work with us enthusiastically in the General Council of the clubs.

During the year the number of aviators' certificates issued was 453, showing an increase of 170 over the previous year.

**General Council of Associated Light Aeroplane Clubs.**—There are now 18 light aeroplane clubs associated with the Royal Aero Club and forming the General Council of Associated Light Aeroplane Clubs. The work of this General Council during the past year has proved of benefit both to us and to all clubs. Exchange of information and views resulting in co-ordinated action has been very helpful and, where the Government has been approached, the advantage of a full discussion of all points of view has helped all interests.

The expression of our joint views has been brought before the Government with satisfactory results. It is to be noted for example, that the recommendations of the General Council to the Secretary of State for Air, on the question of a renewed subsidy for the light aeroplane clubs, has received sympathetic consideration and all the light aeroplane clubs have the satisfaction of knowing not only that they have rendered a great service very economically to the State, but that they are to continue to receive a Government subsidy, at any rate for another two years.

It is clear, also, that the many flying meetings and air rallies organised by the clubs all over the country have done a great deal towards the spread of air-mindedness.

**Affiliated Clubs.**—Apart from the light aeroplane clubs in this country, the Aero Clubs in India, Australia, South and East Africa and Singapore, are all affiliated to the Royal Aero Club, thus keeping the club in contact with the aviation activities of the Empire overseas.

**Benevolent Work.**—During the year, the Flying Services Fund of the Royal Aero Club has distributed in grants and allowances to the dependants of deceased airmen £501 16s. Included in this sum are grants towards the education of children of the deceased airmen.

**Representation.**—The club is represented on the following bodies:—Fédération Aéronautique Internationale, London Chamber of Commerce (Civil Aviation Section), British Corporation Register of Shipping and Aircraft, Lloyd's Register of Shipping, The Standing Joint Committee with the Royal Aeronautical Society, Air League, and Society of British Aircraft Constructors, Royal Air Force Memorial Fund.

Offices: THE ROYAL AERO CLUB  
3, CLIFFORD STREET, LONDON, W.1.  
H. E. PERRIN, Secretary

### W.R.A.F. Reunion

THE seventh annual reunion dinner of the Women's Royal Air Force will be held at the Comedy Restaurant, 38,

Panton Street, Haymarket, S.W.1, on Saturday, April 5, at 7.15 p.m. The chair will be taken by Professor Dame Helen Gwynne-Vaughan, president of the Old Comrades' Association.

# THE GOODYEAR AIR WHEEL

**T**HE Goodyear Tyre and Rubber Co.—who are pioneers in the manufacture of aircraft tyres and accessories—recently developed the Musselman Air Wheel for aircraft, which they suggest will render costly auxiliary shock absorbers unnecessary, and thus add to the load-carrying qualities of the aircraft equipped with this wheel. It also, they claim, increases the safety factor in landing and taking off.

The Air Wheel—shown in the accompanying illustrations—is revolutionary in design, and, as its name implies, the cover has the dual function of a tyre and wheel, being a full balloon cover mounted directly on a hub attached to the 'plane undercarriage, thus eliminating the rim, spoke and wheel.

Other outstanding advantages claimed for this new type of tyre include extreme cushioning for landings; traction in snow, ice, sand and mud; nearness to perfect streamline; elimination of ordinary ground looping; and greater security in cross wind and deflated tyre landings.

The Air Wheel gives larger air volume at extremely low pressure. Extended experiments and tests show it to be capable of sustaining huge loads under ordinary service conditions.

The cover is mounted upon a specially-designed hub, furnished with or without an internal expanding brake, similar to well-known standard types. Smooth and efficient braking has been attained in tests, aviation engineers having stressed the desirability of quick automatic action. Goodyear engineers report the brake tests to date give promise of revolutionary results for aeroplane use.

Aeroplanes have been landed without any perceptible jar or jolt on the new Air Wheel. Test pilots have reported that landings were so soft that it was impossible to tell when the actual contact with the earth took place. This feature, it is pointed out, should increase the life of the machine, and spare the framework from shocks and strains.

Goodyear engineers explain that the secret of anti-bouncing and absorption of shocks in the Air Wheel type of tyre lies in the low pressure and large air volume. The shocks are dissipated in the greater air volume attained in the cover.

The huge sectional diameter of the Air Wheel as compared to its height, produces a flat or web-foot effect when landing, making it possible for a 'plane to make contact safely on soft ground, snow and rough surfaces where high pressure tyres might cause a crash.

Further safety is claimed for the Musselman Air Wheel inasmuch as tests prove conclusively that the straight sidebeads with steel wire rings prevent the cover from climbing the hub flange.

'Planes mounted on the air wheel have shown a tendency to take off easier and with less power than when the ordinary high-pressure tyre is used. The deflection under static load of the Musselman type tyre should be from 2 in. to 5 in., depending on the size of the 'plane, and the size of tyres, based, of course, on the proper low inflation pressure. This is accounted for by the fact that when the 'plane's motor is accelerated, lifting action sets in immediately on the wings and the lifting action begins to take the deflection out of the tyres.

The action is so pronounced that when a machine is blocked and the motor materially accelerated, practically all deflection will disappear. The effect of this force on the tyres is to allow the machine to rise gradually from the ground from 2 in. to 5 in. and still be in contact. Thus it follows that obstructions on the ground or uneven spots will more readily be absorbed by the tyres themselves, and the load of the machine can move forward with less lifting over obstruction, and not hinder the progress of the 'plane, than in the case of the higher pressure type tyre.

It is claimed that:—If the proper size Musselman type tyres are used at proper low air pressure, shock absorbers of all kinds can be done away with. This will not only save weight, but also eliminate the necessity of building the various swivels, joints and loose connections necessary where shock absorbers are used. More perfect results are obtained,



Various sizes of Goodyear-Musselman Air Wheels

they say, than with any shock-absorber so far tested. The landing of a 'plane fitted with Musselman type tyres on a flat tyre, has been tested out and presents less danger, apparently, than with the ordinary high-pressure tyre and wheel. The following is a report on a test carried out by the Goodyear Co. :—

"As an example, for comparison, we used a Musselman type 22 by 10 against a 30 by 5. The 22 by 10 has, with no pressure, a drop of 3.86 in. from recommended pressure to hub, whereas, the 30 by 5 drops 2.36 in., or only a differential of 1½ in. This difference is more than offset by the wide base of the 22 by 10, also the fact that, even without pressure at the instant of impact the atmospheric pressure of the air in the 22 by 10 is raised to a pressure great enough to support a load of over 550 lb. The sudden building up

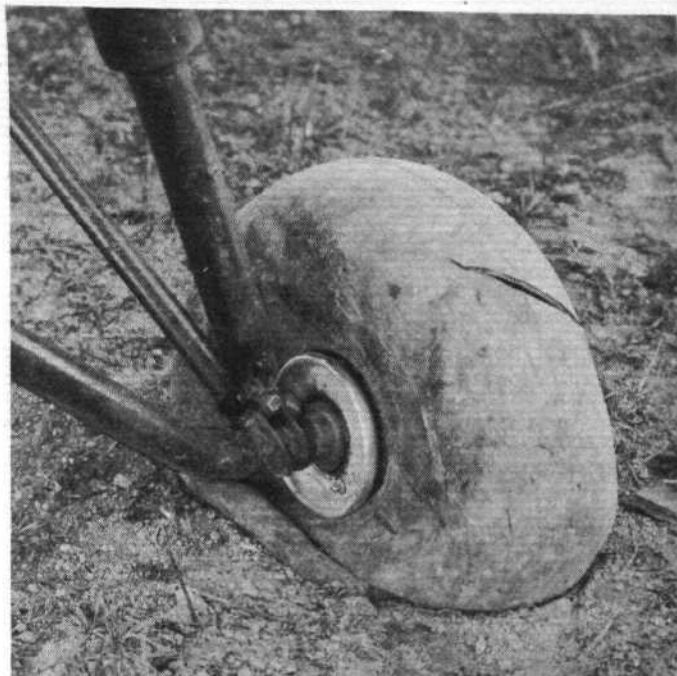


of atmospheric pressure in the tyre takes care of the initial shock of landing. (Figures furnished by Wright Field, Dayton.) Further, the tyre is built with straight side beads, with steel wire rings, and can never be made to jump from the hub and become entangled in the landing gear to cause ground looping."

"Early this year experiments were made at Fulton Field, Akron, with a Waco 'plane fitted with 22 by 10 tyres. The tyres were inflated to 10 lb. pressure, then tests were made with one tyre deflated to  $7\frac{1}{2}$  lb., 5 lb.,  $2\frac{1}{2}$  lb., and the last test made at no pressure. The machine was jumped, taxied, run through soft and muddy ground and shallow ditches. In no case could the pilot detect a difference in the two tyres in the handling of the ship except at complete deflation, and then only after the ship was fully landed and was in taxiing movement. There appeared to be no tendency for the 'plane to ground loop, and, as part of the tests were made in very soft, wet field, the tyres showed themselves to be apparently more safe than the tyres replaced (30 by 5)."

The following figures, supplied by the Goodyear Co., may be of interest. As regards air drag, a 12 by 5 air wheel shows a drag of 1.08 lb. at 100 ft. per second, and from tests at the Wright Air Field a 22 by 10 Goodyear wheel, tested by the U.S. Army against a 30 by 5 ordinary, showed 25 per cent. less drag. A wind-channel test, carried out by Boulton and Paul, Ltd., of Norwich, on a 22 by 10-4 air wheel showed the following results: drag at 100 ft. per sec., 3.566 lb.; drag at 100 ft. per sec. per sq. ft. of projected area, 2.37 lb. The Goodyear Co. are carrying out a series of comparative tests of all the most popular sizes of high-pressure equipments and air wheels. They also made speed tests at three aircraft manufacturers' works, which showed an increase of speed of 5 m.p.h. for 22 by 10 air wheel over the 30 by 5 equipment, and compared with the 24 by 4 and 26 by 4 the speed is approximately the same as for 22 by 10.

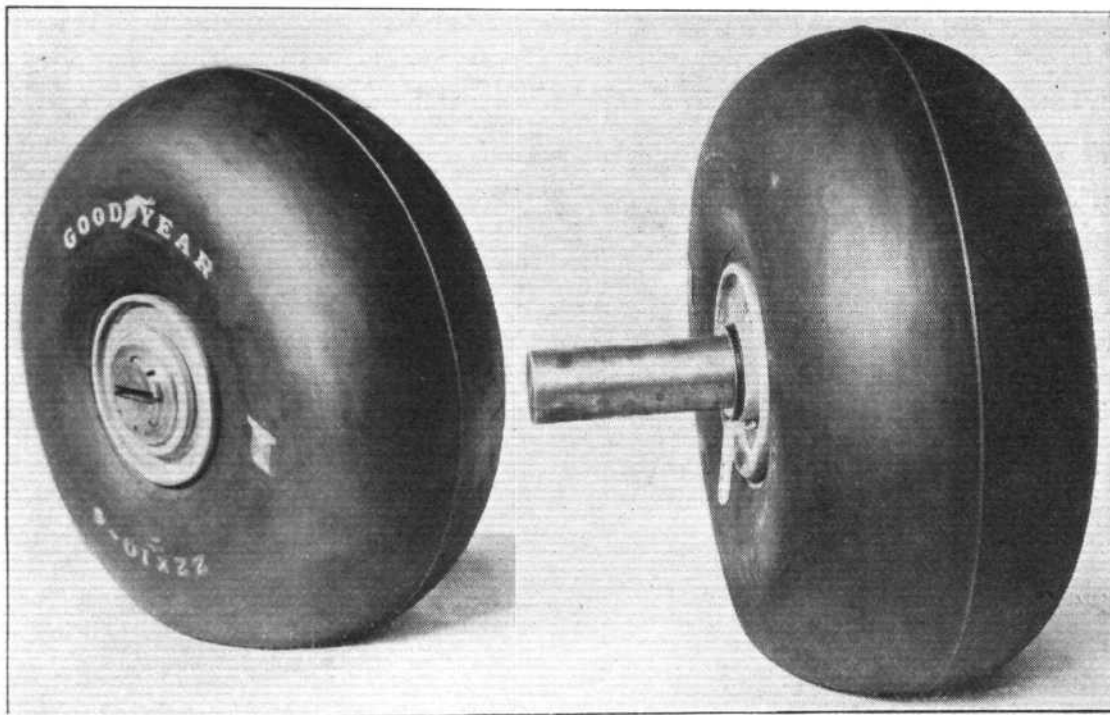
In connection with the shock-absorbing qualities of this wheel, the Goodyear Co. are flying a Fokker Super-Universal (weighing 5,400 lb.) without shock absorbers, with excellent results. They are using the 37 by 16 air wheel on this



**A Goodyear Air Wheel with 5 in. cut, with which take-off and landing tests were made with successful results.**

machine, inflated to 7 lb. pressure, and although they have carried out some hard landings, the tyre has not gone on the rim.

Further information regarding these wheels may be obtained from the Goodyear Tyre and Rubber Co. (Great Britain), Ltd., Chelsea Wharf, Lots Road, S.W.10.



**Two views of the Goodyear Musselman Air Wheel in which the balloon tyre serves the double function of tyre and wheel.**

#### The Aero Golfing Society

The first meeting of the year was held at Coombe Hill on Tuesday, March 25, when the members competed for the Instone Challenge Trophy, presented by Sir Samuel Instone. The leading scores were: E. N. Clifton, 77; A. J. A. W. Barr, 78; Flight-Lieut. L. Massey Hilton, 78; and Group Captain E. F. Briggs, 79.

#### The S.B.A.C. Challenge Cup

The Royal Aero Club has decided that the Challenge Cup presented by the Society of British Aircraft Constructors

for competition amongst the Light Aeroplane Clubs shall be competed for at the Bristol Air Pageant, to be held on May 31. Cash prizes of £75 have also been presented by the Society of British Aircraft Constructors.

#### Flight-Lieut. A. L. Chick's New Post

FLIGHT-LIEUT. A. L. CHICK, A.F.C., who was placed on the retired list of the Royal Air Force in May last, has joined the board of Messrs. Titanine-Emallite, Ltd., Empire House, 175, Piccadilly, London, W.1, the well-known manufacturers of aeroplane dope, varnish and lacquer.

# AIR MINISTRY NOTICES

## NOTICE TO AIRCRAFT OWNERS AND GROUND ENGINEERS Safety Belts and Safety Harness

1. The attention of aircraft owners, ground engineers and all concerned is drawn to the requirements of the Air Navigation Directions with regard to the provision and maintenance of safety belts in civil aircraft. These are as follow:—

- (i) Paragraph 60 (1) (i) (a) of the Air Navigation Directions 1928 (A.N.D., 7), calls for the provision, in all flying machines, of a safety belt for each person, including the pilot, carried in an open cockpit.
- (ii) Safety belts are regarded as part of the equipment of the aircraft, and both the belt itself and its attachment to the aircraft are, therefore, included in the items to be inspected and certified by a ground engineer licensed in Category "A," in accordance with paragraphs 53 (a) and 54 (a) of the Air Navigation Directions (A.N.D. 7). In any case in which it is suspected that the strength of a safety belt has deteriorated, the ground engineer should remove the belt from the aircraft, support it by any convenient means in a manner similar to that in which it is attached in the aircraft, and apply a proof load of 300 lb. by loading the centre of the belt.
- (iii) Where ropes are used for attaching the belts to the aircraft, the strength of the rope should be approximately 14 cwt. "Lapped" joints in ropes are considered unsatisfactory and the use of ropes which allow of a spliced or "whipped" joint is more satisfactory. In all cases of "whipping," good quality kite cord should be used, and in order to minimise the slip when the rope is subjected to subsequent strain, the "whipping" should be carried out while the joint is under tension. All loose ends of ropes should be "Served" to prevent fraying, and in no case should a rope be connected directly to a plate where chafing may occur.
- (iv) Anchorage plates, where secured by bolts, should be so arranged that the shear is taken at the bolt head rather than the screwed end, as cases have arisen where the plates bearing on the screwed end have sheared the bolt.

The minimum diameter of any bolt used in anchorage fittings should be 2.B.A. The fixing of an anchorage plate or connection to the middle of a structural member should be avoided, and the belt be so arranged as to sustain the upper part of the body.

(v) The release gear on the belt should always be correctly positioned for easy manipulation, and should be maintained in a lubricated condition.

2. The attention of all concerned is also drawn to the fact that the requirements of Design Leaflet E.3 of Air Publication 1208 have been brought into effect in respect of all applications for Certificates of Airworthiness, as follows:

- (i) Applications for type Certificates of Airworthiness after November 1, 1929.
- (ii) Applications for subsequent Certificates after February 1, 1930.
- (iii) Applications for renewals of Certificates of Airworthiness, so far as the requirements can be satisfied, after February 1, 1930.

3. The requirements of Design Leaflet E.3, of Air Publication 1208, are as follow:—

### STRENGTH REQUIREMENTS FOR SAFETY BELTS AND SAFETY HARNESS FOR CIVIL AIRCRAFT.

(i) Only belts or harness of approved types may be used. Approval of a type will be notified by an addition to Leaflet E.1 of Air Publication 1208, and will be obtained by submitting a sample belt or harness to the following tests:—

#### (a) Two-piece Belts

The complete belt, straightened out, is to be tested under tension until it fails, and must stand a load of not less than 1,100 lb. before failure occurs.

#### (b) Four-piece Harness

The shoulder straps of the completely assembled belt shall be attached to a cross bar at points 12 in. apart. The thigh straps shall be attached to a cross bar in a similar manner. Load shall be applied to the cross bars at points midway between the attachments of the straps and in such a manner as to extend the belt in the form of an X, all load passing through the release pin.

The harness must be loaded in this manner until it fails, and must support a total load of not less than 1,100 lb. before failure occurs.

(c) The belt or harness must be fitted with a release device that will function satisfactorily under a load of 250 lb. with the belt or harness arranged as specified in (a) and (b). This test is to be repeated three times.

(ii) Each and every belt or harness must be proof loaded by applying a total load of 300 lb. in the manner described at (i) (a) and (i) (b) above, for two-piece belts and four-piece harnesses respectively. As a result of this test no sign of failure or deformation must be apparent.

(iii) Two-piece belts must be at least 4 in. wide, and capable of adjustment in order to prevent slipping downwards from the chest to the abdomen. The position of the points of attachment must be such that the belt can be worn comfortably over the chest by an average person.

(iv) All end attachments and fittings used in conjunction with belts and harness, together with those parts of the aircraft to which the belt loads are transmitted, must be capable of withstanding the load arising from the belt load mentioned in paragraph (i) above. The distribution of the total load between the various points of attachment, if more than one, will depend upon the design of the belt or harness, and must, therefore, be considered separately for each type of belt or harness and each type of aircraft.

(v) Three-piece harness, i.e., harness with only one leg strap passing between the wearer's legs, will not be approved for use in civil aircraft.

(vi) The use of leather as a material for safety belts and safety harness is prohibited.

4. Cancellation.—Notices to Ground Engineers Nos. 4 of 1920, 5 of 1928 and 23 of 1929, are hereby cancelled.  
No. 6 of 1930.

## AIR MINISTRY NOTICES TO AIRMEN

### Night Flying without Navigation Lights

ROYAL Air Force aircraft will be flying every night between 2030 and 2400 hours during the period from April 1, 1930, to May 17, 1930, inclusive, over an area bounded by straight lines joining Bromley, Dartford, Gravesend, Rochester, Maidstone, Tonbridge, Oxted, Warrington and Bromley.

Above an altitude of 6,000 ft. the aircraft will not exhibit navigation lights, unless other aircraft are observed in their immediate vicinity.

Navigation Warning (No. 6 of 1930)

### Air Navigation (Amendment) Order, 1930

1. An Order in Council has been established further amending the Air Navigation (Consolidation) Order, 1923, as amended by the various subsequent Air Navigation (Amendment) Orders. The new Order is entitled the Air Navigation (Amendment) Order, 1930, and copies are obtainable direct from H.M. Stationery Office, or through any bookseller, price 1d. net.

2. The principal matters affected by the provisions of the new Order are as follow:—

(i) The fee chargeable on the issue of a certificate of registration, in certain cases where the aircraft has been previously registered in Great Britain and Northern Ireland.

(ii) The fees chargeable in respect of the issue and renewal of licences to personnel.

3. The new Order came into operation provisionally as from February 27, 1930.

4. The Air Navigation (Amendment) Order, 1929, is revoked by the new Order, and should be deleted from the list of air navigation regulations, etc., published in N/A, General Notice No. 2 of the year 1930.

General Notice (No. 9 of 1930)

### Flights to Greenland

1. PERMISSION for flights to or over Greenland must be obtained in advance from the Danish Government, and application for such permission should be addressed to the Danish Legation, 29, Pont Street, London, S.W.1.

2. No supplies of aviation fuel, oil, spare parts, etc., are available in Greenland. Arrangements for the supply, transport and storage of the necessary stores must, therefore, be made prior to the flight being effected.

General Notice (No. 11 of 1930)

# IN PARLIAMENT

## Irish Free State Treaty

MR. MANDER, on March 20, asked the Under-Secretary of State for Air whether Article 3 of the annex to the Irish Treaty of 1921, by the terms of which a convention was to be made between the British and the Irish Free State Governments for the regulation of civil connection by air, has been carried into effect; and, if not, what the present position is?

MR. MONTAGUE: No convention under the Article to which the hon. member refers has yet been made, but no difficulties have in practice arisen in this country through its absence.

## Municipal Aerodromes and Durham

MR. EDE asked the Under-Secretary of State for Air if he has received any proposals for the establishment of aerodromes in the County of Durham, and if he has given any decisions on such proposals?

MR. MONTAGUE, in answer to Mr. Ede, said certain sites have been inspected by the Air Ministry at the request of the Central and North Durham Joint Town Planning Committee and an inspection has just been made of a possible site for a sea aerodrome near South Shields. I understand certain other municipalities (with whom, of course, the initiative rests in this matter) have under consideration the question of providing aerodromes in their vicinity, but no further concrete proposals have been communicated to the Air Ministry.

## Iraq and Palestine

MR. MONTAGUE, in answer to Sir A. Knox, said the cost of the R.A.F. in the Middle East Command for (a) Iraq and (b) Palestine and Transjordan for the financial years 1923-24 to 1927-28 in those two commands during the years specified are:

Cost of Royal Air Force in	Iraq	Palestine and Transjordan
1923-24 .. .. .	£ 3,575,984	£ 751,443
1924-25 .. .. .	3,188,675	513,931
1925-26 .. .. .	2,712,359	359,437
1926-27 .. .. .	2,207,600	313,737
1927-28 .. .. .	1,392,000	255,067

## West Indies and British Guiana

COMMANDER BELLAIRS, on March 25, asked the Under-Secretary of State for Air what steps have been taken to carry out the Report of the 1927 Committee on Civil Air Transport in the West Indies and British

Guiana; what steps are still in contemplation; and whether any foreign enterprise is functioning there or in British Honduras?

MR. MONTAGUE: The Report referred to dealt only with the question of opportunities for civil aviation in the West Indies, and it rested with private enterprise to come forward with proposals for making use of such opportunities as the Committee considered to exist. Certain proposals to this end have been made, but have not matured owing to financial difficulties. The Minister is anxious to further the establishment of British civil air services in this region by all possible means, so far as financial limitations permit. I would refer to my remarks during the course of the Air Estimates Debate on March 18. The answer to the last part of the question is in the affirmative; the American aircraft in question traverse the West Indies and British Guiana in the course of air services between the United States and South America, and one of the companies operates also over British Honduras.

## Civil Aircraft (Statistics)

MR. MONTAGUE, in reply to Mr. Day, said the number of civil aircraft registered in Great Britain and Northern Ireland on February 28 last was 646: of these 443 held current certificates of airworthiness.

## Air Service

MR. HURD, on March 26, asked the Under-Secretary of State for Air what are the nature and duration of the facilities granted to Pan-American Airways for the operation of American air services in Trinidad; whether he is aware that while American machines are flying over British West Indian routes not a single British machine is in operation?

MR. MONTAGUE: The Governor of Trinidad has granted for a period of six months, subject to renewal, a special and temporary authorisation permitting aircraft of Pan-American Airways to fly over and land in the Colony on flights from the United States of America to the Colony and to South America and back. Permission to erect and operate a wireless telegraph station, to extend the jetty at Cocorite, and to reclaim a portion of the foreshore has also been given. The possibility of establishing a British air service in that area is still being explored.

## Air Mail

MR. LEES-SMITH (Postmaster-General), on March 27, in reply to Mr. Day, said the figures for the number of letters sent and received by air mail are not available, but for the six months ended December 31, 1929, the carryings outward amounted to approximately 39,000 lbs., and inward to about 55,000 lbs.



# THE ROYAL AIR FORCE

London Gazette, March 25, 1930.

## General Duties Branch

The follg. are granted short service commns. as Pilot Officers on probation with effect from and with seniority of March 14:—L. H. Anderson, W. A. A. Ashcroft, E. G. Barter, G. Burdick, N. Daunt, A. P. Glenny, W. Halmshaw, T. King, W. E. L. Lewis, T. J. MacDermot, D. M. T. Macdonald, R. I. G. MacDougall, B. J. McGinn, P. H. Maxwell, R. T. S. Morris, J. C. F. Peacock, G. B. Pierpoint, W. A. Richardson, W. A. J. Satchell, H. A. Simmons, L. Sloman, E. C. Van Oppen, A. W. Vincent, R. G. Wilde, J. D. Woodland.

The follg. Pilot Officers are promoted to rank of Flying Officer:—F. Whittle, J. Mutch (Jan. 28); R. A. Beynon, M. G. Parker, S. P. Richards, R. Jones (Feb. 24).

Flying Officer (Hon. Flight-Lieut.) U. C. de Burgh relinquishes his short-service commn. on completion of service (March 20); the short-service commn. of Pilot Officer on probation D. McGregor-Cheers is terminated on cessation of duty (March 26); Lieut. R. H. S. Rodger, R.N., Flying Officer, R.A.F., ceases to be attached to R.A.F. on return to Naval duty (March 19).

## Medical Branch

Flight-Lieut. E. J. T. McWeeney, M.B., B.Ch., is transferred to Reserve, Class Di. (March 24).

## RESERVE OF AIR FORCE OFFICERS

### General Duties Branch

J. P. R. Oakes is granted a commn. in Class A.A. (ii) as a Pilot Officer on probation (March 13); J. W. Brown is granted a commn. in Class A as a Flying Officer on probation (March 25).

The follg. Flying Officers are transferred from Class A to Class C.—E. F. D. Gregory (Dec. 15, 1929); H. C. Macpail (Nov. 30, 1929). Flight-Lieut. D. Craik, D.F.C., ceases to be employed with the Regular Air Force (March 20); Flying Officer G. D. Emms relinquishes his commn. on appointment to a permanent commn. in the R.A.F. (March 8).

## AUXILIARY AIR FORCE

### General Duties Branch

No. 601 (COUNTY OF LONDON) (BOMBER) SQUADRON.—The follg. to be Pilot Officer:—The Hon. William D. S. Montagu (Feb. 12).

## ROYAL AIR FORCE INTELLIGENCE

**Appointments**—The following appointments in the Royal Air Force are notified:—

### General Duties Branch

**Flying Officers:** M. A. Platts, to No. 7 Sqdn., Worthy Down; 15.2.30. R. G. Hart, M.C., to No. 28 Sqdn., India; 24.2.30. G. N. E. Tindal-Carill-Worsley, to No. 20 Sqdn., India; 7.3.30. K. E. Parker, to R.A.F. Base, Gosport; 13.1.30. W. T. Walton, to No. 207 Sqdn., Bircham Newton; 3.3.30. J. Constable-Roberts, to R.A.F. Training Base, Leuchars; 3.3.30. J. D'A. Keary, to H.Q., Inland Area, Stanmore; 6.3.30.

### Stores Branch

**Flight Lieutenants:**—H. B. S. Ballantyne, to Station H.Q., Worthy Down, 3.3.30. R. V. J. S. Hogan, to School of Photography, S. Farnborough, 1.3.30.

**Flight Lieutenants:** H. Sleigh, to H.M.S. Eagle; 1.3.30. J. L. Denman, to Station H.Q., Andover; 4.3.30.

**Flying Officer:** C. I. Fry, to Aircraft Depot, Iraq, 31.1.30.

**Flying Officer:** C. I. Fry, to Base Transport Section, Iraq, 6.2.30.

**Flying Officers:** A. E. Haes, to No. 13 Sqdn., Netheravon; 6.3.30. E. J. Fishenden, to R.A.F. Depot, Uxbridge; 11.2.30. E. A. Slater, to Aircraft Depot, India; 5.2.30. C. W. H. Moller, to No. 3 (Indian) Wing H.Q., India; 14.2.30. P. V. Edwards, to Aircraft Park, India; 7.3.30. A. Connock, to Aircraft Park, India; 7.3.30.

### Accountant Branch

**Flight-Lieutenant** E. J. Grout, to Station H.Q., Donibristle, 13.2.30.

**Flying Officer:** K. A. Jackman, to No. 4 Sqdn., S. Farnborough, 18.1.30.

**Flying Officer** S. W. Hill, to H.Q., R.A.F., Middle East; 1.3.30.

### Medical Branch

**Air Commodore** J. McIntyre, M.C., M.B., B.Ch., to Air Ministry (D.M.S.), on appointment as Director of Medical Services; 1.3.30.

**Squadron Leader** P. H. Young, to R.A.F. Depot, Uxbridge, 18.1.30.

**Squadron Leader** A. A. McMullan (Dental), to H.Q., R.A.F., Middle East, 1.3.30.

**Squadron Leader** T. R. S. Thompson, to R.A.F. General Hospital, Iraq; 27.1.30.

**Flight Lieutenants:** J. Parry-Evans, to R.A.F. Depot, Uxbridge, 9.2.30. E. P. Carroll, to R.A.F. Depot, Uxbridge, 9.2.30. J. F. McGovern, to R.A.F. Depot, Uxbridge, 18.1.30.

**Flight Lieutenants:** N. I. Smith, to H.Q., R.A.F., India; 7.3.30. L. P. McCullagh, to Station H.Q., Duxford; 17.3.30.

**Flying Officer** J. J. Corcoran, to No. 47 Sqdn., Middle East, 1.3.30.

**Flying Officer** J. S. Webster, to Medical Training Depot, Halton, on appointment to a Short Service Commn; 3.3.30.

## R.A.F. SPORT

### FENCING

**R.A.F. V. SABRE CLUB.**—On Tuesday, April 1, the Sabre Club beat the Royal Air Force by 20 points to 16 in a six-a-side match at the Sabre Club. Five of the winning team were entered for the Sabre Championship. Against this very strong side the R.A.F. fought very well indeed, and Sqdn.-Ldr. Sherriff, Sergt. Hancock and Sergt. Stubberfield especially distinguished themselves. **Results:**—

**SABRE CLUB.**—Capt. G. L. Harry—5 wins, 1 loss, 7 hits; O. G. Trinder, 5—1—10; A. G. Pilbrow, 4—2—13; Major C. Barry Nottley, 2—4—13; A. H. Jeffreys, 2—4—14; Cmdr. C. G. Heys Hallett, 2—4—15. Total—20 wins.

**ROYAL AIR FORCE.**—Sqdn.-Ldr. F. G. Sherriff and Sergt. Hancock—each 5 wins, 1 loss, 7 hits; Sergt. Stubberfield, 3—3—11; F.O. Vandyke, 2—4—13; Flight Lieut. G. C. O'Donnell, 1—5—17; Flight Lieut. Keeble, 0—6—18. Total—16 wins.

### POINT-TO-POINT

A point-to-point meeting of the Old Berkeley Hunt and the Royal Air Force, was held at Kimble, near Aylesbury, on Tuesday, April 1. The

course was one of three and a-half miles, and very good racing was witnessed. **Results:**—

**Members' Light-Weight.**—Mr. E. T. Drake's Madeira (Major Wilson), 1; Mr. R. Watson's Rocketter II. (Mr. Watson, Jun.), 2; Mrs. R. A. Haywood's Tom Pepper, 3. Neck. Six ran.

**Welter-Weights.**—Mrs. R. A. Hopwood's White Light (Mr. Judd), 1; Mr. R. Watson's Perivale II. (Mr. Watson, Jun.), 2; Mr. C. H. Wright's Mountain Lad, 3. Won easily. Five ran.

**Hunt Nomination.**—Lady Currie's Court Banker (Capt. Spooner), 1; Mr. E. T. Drake's Holmes (Major Wilson), 2; Messrs. Buckmaster and Gregory's Rose Marie (Mr. C. Beechener), 3. Six lengths; same. Eight ran.

**Ladies' Adjacent Hunts.**—Capt. A. Kyle's Brackley (Miss Eda Brooks), 1; Mr. J. S. Judd's Benjamin (Miss Enid Crichton), 2; Miss N. Blackwell's Treacle (owner), 3. Three lengths; four. 12 ran.

**Adjacent Hunts' Maiden.**—Miss D. Gosling's Hazel Tree (Mr. W. Bonner), 1; Capt. C. B. Benson's Happy Thoughts (owner), 2; Mr. J. Bourne's Watercress (Mr. C. C. Beechener), 3. Six lengths; same. Seven ran.

**Farmers' Race.**—Mr. A. Roberts's Wrong Address (owner), 1; Mr. S. W. Harris's Dan Lenno (owner), 2; Mr. C. A. Garner's Willingdon (Mr. Witheray), 3. Five ran.

## R.A.E.S. AND INST.AE.E.

### Official Notice

At the annual general meeting of the Society, held on Tuesday, March 25, 1930, the ballot papers for election of the new Council were counted. The voting was the heaviest in the history of the Society. The following is the composition of the new Council:—

**President:** Colonel the Master of Sempill, A.F.C., A.F.R.Ae.S.

**Past President:** Air Vice-Marshal Sir W. Sefton Branner, K.C.B., A.F.C., F.R.Ae.S.

**Vice-Presidents:** Air Vice-Marshal Sir Vyell Vyvyan, K.C.B., D.S.O.; Lieut.-Col. J. T. C. Moore-Brabazon, M.C., F.R.Ae.S., M.I.Ae.E.; Mr. H. E. Wimperis, C.B.E., F.R.Ae.S.

**Council:** Captain P. D. Acland, Prof. L. Bairstow, C.B.E., F.R.S., F.R.Ae.S.; Major T. M. Barlow, M.Sc.(Eng.), M.Inst.C.E., M.I.Mech.E., F.R.Ae.S.; Mr. Robert Blackburn, O.B.E., A.M.Inst.C.E., M.I.Mech.E., F.R.Ae.S., M.I.Ae.E.; Mr. M. L. Bramson, A.C.G.I., F.R.Ae.S., M.I.Ae.E.; Mr. Griffith Brewer, F.R.Ae.S.; Major J. S. Buchanan, O.B.E., A.M.I. Mech.E., F.R.Ae.S.; Major G. P. Bulman, O.B.E., B.Sc., A.F.R.Ae.S.; Wing Cmdr. T. R. Cave-Browne-Cave, C.B.E., M.I.Mech.E., A.M.I.N.A., F.R.Ae.S.; Mr. C. R. Fahey, M.B.E., F.R.Ae.S.; Captain F. T. Hill, F.R.Ae.S., M.I.Ae.E., B.Sc., Wh. Ex.; Captain A. G. Lamplugh, F.R.Ae.S., M.I.Ae.E.; Mr. W. O. Manning, F.R.Ae.S.; Major R. H. Mayo, O.B.E., F.R.Ae.S.; Mr. T. O. M. Sopwith, C.B.E., F.R.Ae.S.; Mr. C. C. Walker, Assoc. M.Inst.C.E., F.R.Ae.S.; Mr. L. A. Wingfield, M.C., D.F.C., A.R.Ae.S.I.

**Honorary Treasurer:** Major D. H. Kennedy, O.B.E., F.R.Ae.S.

**Honorary Solicitor:** Lawrence A. Wingfield, A.R.Ae.S.I.

**Honorary Librarian:** Mr. J. E. Hodgson.

**Honorary Accountant:** Mr. A. M. D. Smith, F.I.C.A.

J. LAURENCE PRITCHARD, Secretary.

## WESTLAND AIRCRAFT SOCIETY

### (Yeovil Branch, R.Ae.S.)

UNDER the Chairmanship of Mr. V. S. Gaunt, A.M.I.Ae.E., Mr. T. S. Duncan, of Messrs. Vickers (Aviation), Ltd., of Weybridge Works, Weybridge, Surrey, delivered before the Members of the Westland Aircraft Society a lecture on the subject of "Aircraft Accessories," at the Three Choughs Hotel, Yeovil, on Thursday evening, March 27.

By means of lantern slides, Mr. Duncan was able to explain in detail drawings of petrol and oil cocks, Vickers-Potts oil coolers, petrol pumps—both wind-driven and hand-operated—Vickers patent Oleo shock absorbers of all sizes, from 200 lbs. to 1,300 lbs., and Vickers patent aero brakes (hydraulically operated).

Immediately following the lecture a film, showing models of various types of aircraft under test and a tour of Messrs. Vickers Works, was exhibited.

The interest in the subject was apparent by the resultant discussion, the lecturer preferring to answer questions at length rather than leave room for any doubt.

Mr. Gaunt called upon Mr. J. Johnston to propose a vote of thanks to the lecturer. Mr. Johnston, recalling his personal association with Messrs. Vickers in the early days, said, for that reason, his duty was particularly pleasant. It was gratifying to know—and evidence of the ever-growing importance of aviation—that Messrs. Vickers' activities had so grown to warrant the formation of a special department to deal solely with aircraft accessories. The Society had reason to be grateful to them, and to Mr. Duncan, for an extremely instructive lecture.

## THE ROYAL AIR FORCE MEMORIAL FUND

THE usual Meeting of the GRANTS SUB-COMMITTEE of the Fund was held at Iddesleigh House, on March 27. Mr. W. S. Field was in the Chair, and the other Members of the Committee present were: Mrs. L. M. K. Pratt-Barlow, O.B.E.; Air Commodore B. C. H. Drew, C.M.G.; Squadron-Leader A. H. Wann. The Committee considered in all 11 cases, and made grants to the amount of £150 14s. 5d.

## MODELS

## THE GAMAGE CUP COMPETITION.

**A**EROMODELLISTS assembled on Wimbledon Common last Saturday (March 29), to compete for the Gamage Cup in a competition for duration. The two outstanding clubs represented were, Society of Model Aeronautical Engineers, and The Model Aircraft Club, with a few non-attached. Unfortunately the weather turned out so rough that the judges, Mr. Langlen and Mr. Crouch, decided at 4.30 p.m. to postpone the competition until next Saturday, April 5.

In between the showers some excellent performances were put up. The T.M.A.C. seemed to be the first to prepare their machines, the S.M.A.E. did not bring theirs out until after the storm abated.

Messrs. Welding, Knight, Willis, Gibson, Dowsett (T.M.A.C.) put up some good flights with their models before 3 o'clock, when the competition was supposed to start. After 4.30 p.m. Messrs. Evans, Pelly-Fry, Bullock, Ives, Jackson, Badley and other members of the S.M.A.E. did some good flying, after which we had great difficulty in distinguishing the separate clubs, as all the members got together in some "mass formation" flying.

It appeared strange in these modern days to see some of the old aeromodellists flying Twin Pushers, it took one's mind back to pre-war days. Messrs. Badley, Bullock, Pavely, D'Urban, Jackson, Pelly-Fry all had Twin Pushers. Pavely getting in a flight of approximately 90 seconds, when his model landed in a tree, but was recovered by the noted tree-climber of the T.M.A.C., Mr. Knight.

Ives, Evans, Pelly-Fry, and Badley (S.M.A.E.) had enclosed fuselage models whose machines put up a good performance.

There were a large number of juvenile members of both clubs, also doing their uttermost to be a credit to their respective clubs.

## THE MODEL AIRCRAFT CLUB (T.M.A.C.)

A large number of members were practising with their models on Sunday both on Hampstead and Wimbledon Common. On the latter ground an extraordinary flight was made by Mr. A. T. Willis with his enclosed fuselage model. He launched in the ordinary way for the purpose of having a photograph taken, with no intention of putting up a record, but to the surprise of everyone, it rose to a height of between 300 and 400 ft., circled round and went off still rising in a direct line until it was right out of sight, this took approximately five minutes. It was the most fascinating and sensational flight that has been witnessed for many a long day in this country. Mr. Willis has offered a reward of ten shillings to anyone who locates the model or returns same to him.

This flight seems to confirm the opinion of others that there are rising currents of air over the Common and that some wonderful records will be made.

On Wednesday, April 16, at 7 p.m., at the Junior Institution of Engineers, 39, Victoria Street, Westminster, S.W. 1, a debate has been arranged on mechanical versus rubber-driven models. All members should try and be present. Hon. Secretary, A. E. Jones, 48, Narcissus Road, West Hampstead, London, N.W.6. 'Phone Hampstead 8363.

## Institute of Patentees Scholarships, 1930

In co-operation with the Polytechnic and Association of Principals of Technical Institutions, a scholarship foundation, covering chemistry, applied chemistry, physics, mathematics, electrical and mechanical engineering and metallurgy, of far-reaching importance has been inaugurated by the Institute of Patentees (Inc.). With the object of encouraging inventive talent amongst those whose circumstances do not permit them to undergo the ordinary courses of technical training, the Institute has decided to found a series of presentation courses, commencing in September, at one or more of the recognised technical schools and polytechnics which exist throughout the country.

The possession of some technical knowledge is essential to the production of a successful invention. The records of the Patent Office show all too clearly that inventors are often hampered by the lack of any basic scientific education. The Institute of Patentees is aware that an increasing number of young men and women are becoming interested in all popular technical matters and that amongst them are many to whom the support may afford an opportunity of making contributions to industry and commerce of the utmost national importance.

The scholarships are open to candidates of both sexes of all nationalities and, in general, of any age over 16, and no fees whatsoever are payable by the candidates. They entail about three evenings' work a week in addition to home work. All applications will be considered by a committee set up by the Institute of Patentees (Inc.) and will include not less than two members of the Association of Principals of Technical Institutions. Successful candidates will have the necessary fees paid for them which will include associate membership of the Institute of Patentees (Inc.) and a grant of £1 towards the cost of books.

## "K.B.B." Aircraft Compasses

KELVIN, BOTTOMLEY AND BAIRD, LTD., of Glasgow and London, have issued a very interesting booklet, entitled "K.B.B. Aircraft Compasses," which tells one all about the various compasses manufactured by them for use on aircraft. We need hardly remind our readers that "K.B.B." are pioneers in the design and construction of aircraft compasses, such aviation "Old-timers" as Cody, Boyle, Gilmour, Latham, Ducrocq, Hamel, Grahame-White, etc., having used "K.B.B." compasses on their early flights. Many improvements in aircraft compasses have, of course, been made since those days, and particulars of the latest models, with notes on their use and installation, will be found in this booklet—copies of which may be obtained on application to Messrs. Kelvin, Bottomley and Baird, Ltd.

## Mr. C. S. Hollinghurst

MR. C. S. HOLLINGHURST, M.C., D.S.M., for the past six years publicity manager of C. C. Wakefield and Co., Ltd., manufacturers of Castrol motor oils, has now vacated this position, and would be glad if his numerous friends would note this.

## NEW COMPANIES REGISTERED

AVIATION TOURS, LTD., Stafford Road, Wallington, Surrey.—Capital £1,500, in £1 shares. Objects: to establish, maintain and work lines of aeroplanes, seaplanes, taxiplanes and aerial conveyances from and to all parts of the world, etc. Directors: E. B. Fielden, Fairleigh, Draughton, Skipton, aeroplane pilot; F. W. J. Grant, 10, Purley Park Road, Purley, engineer.

BRIAN LEWIS AND C. D. BARNARD, LTD. Capital £4,000 in £1 shares. Acquiring from Malcolm Campbell (London), 1927, Ltd. (inter alia) the goodwill of their business as agents for and dealers in aeroplanes. Subscribers are:—C. D. Barnard, 25, Monmouth Road, Bayswater, W.2, aeroplane pilot; B. E. Lewis, 11, Charles Street, Berkeley Square, W.1 (director, Malcolm Campbell (1927), Ltd.). Solicitors: Middleton, Lewis and Clarke, 22, Gt. St. Helens, E.C.3.

## AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations): Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

## APPLIED FOR IN 1928

Published April 3, 1930

- 31,930. A. L. DAVIS. Aircraft lamps. (326,162.)  
35,821. N. BASENACH. Flying-boat. (302,232.)  
36,208. GLOSTER AIRCRAFT CO., LTD., and G. W. CHARLEY. Riveted or bolted joints. (326,235.)

## APPLIED FOR IN 1929

Published April 3, 1930

- 7,532. W. S. AND B. B. HENDERSON (trading as Hendy Aircraft Co.) and H. A. MILES. Construction of wings or tail planes. (326,349.)  
9,519. N. LONGHIN. Rotary i.c. engines. (308,688.)  
12,772. E. M. G. LEPERE. Construction of wings. (313,149.)  
15,030. B. VOICECHAUSSIS. Safety devices for aeroplanes. (326,407.)

## APPLIED FOR IN 1930

Published April 3, 1930

- 3,659. J. ARMOUR. Apparatus for use in dropping from aircraft smoke-producing devices for indicating ground wind. (326,181.)

## FLIGHT, The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C.2

Telephone: Editorial, Holborn 1884;

Advertising, Holborn 3211.

Telegraphic address: Truditur, Westcent, London.

## SUBSCRIPTION RATES POST FREE

UNITED KINGDOM.		UNITED STATES.		OTHER COUNTRIES.	
	s. d.				s. d.
3 Months	7 7	3 Months	\$2.6	3 Months	8 3
6 "	15 2	6 "	\$4.12	6 "	16 6
12 "	30 4	12 "	\$8.24	12 "	38 0

\* Foreign subscriptions must be remitted in British currency.

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C.2, and crossed Westminster Bank.

Should any difficulty be experienced in procuring "FLIGHT" from local newsvendors intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.